The Mining Journal

Established 1835 — Railway & Commercial Gazette

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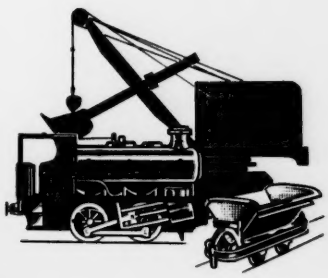
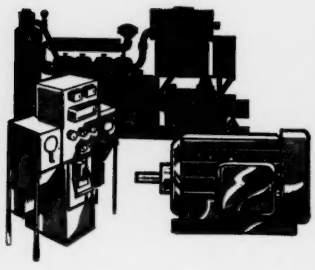
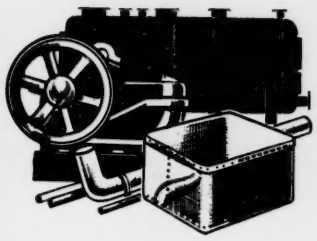
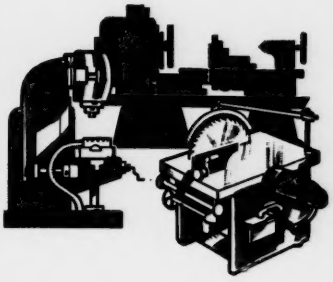
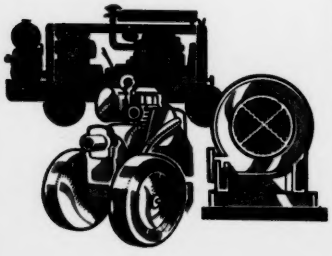
TWW and MINING

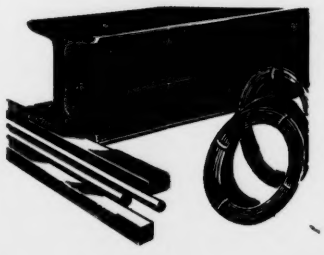












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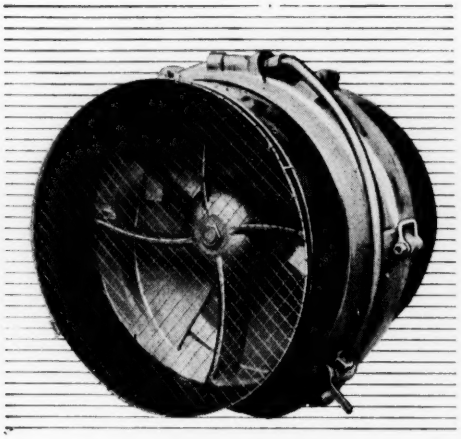

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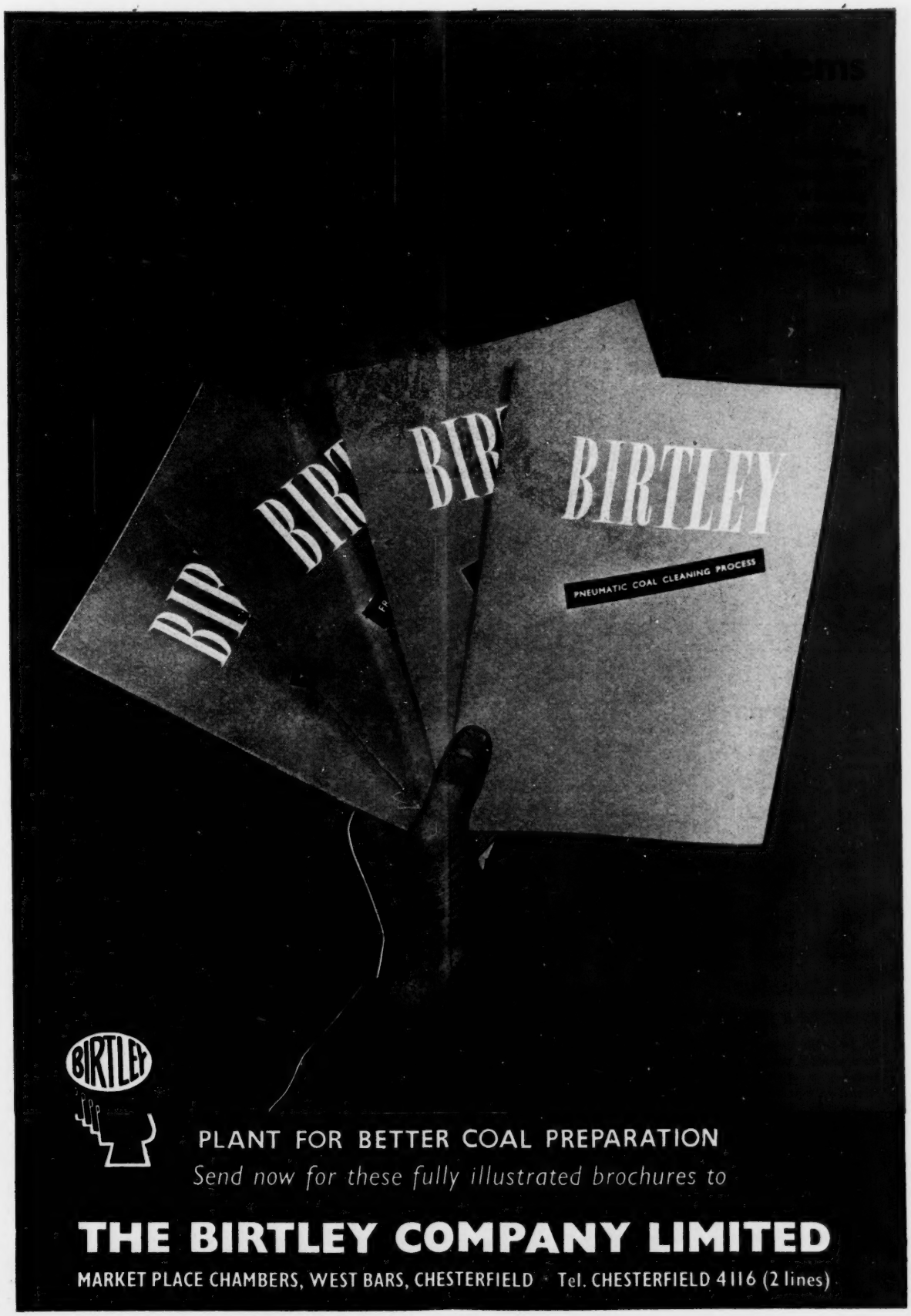
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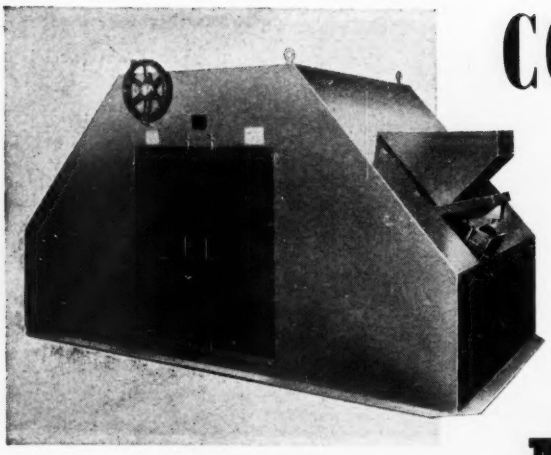

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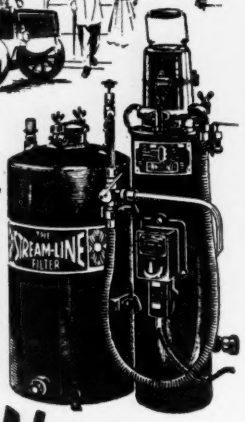

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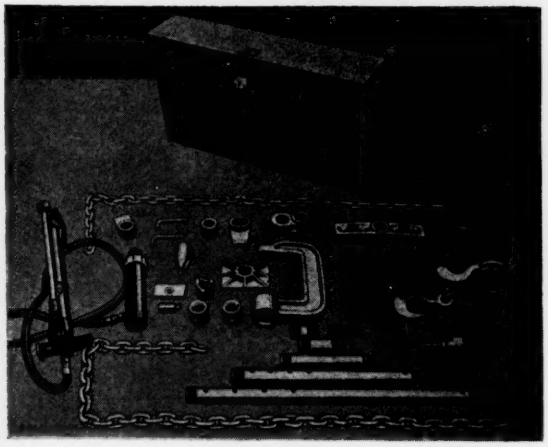

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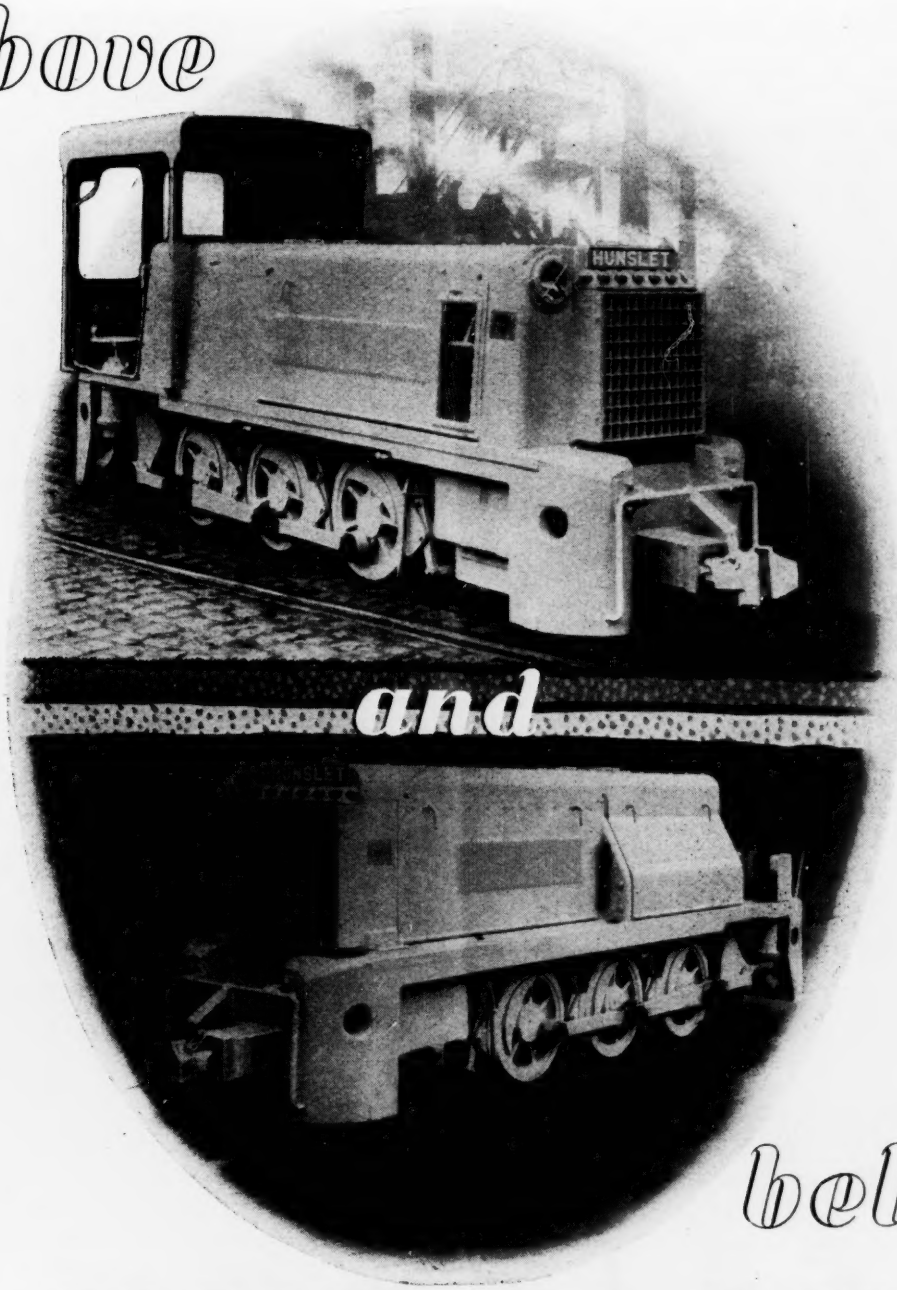

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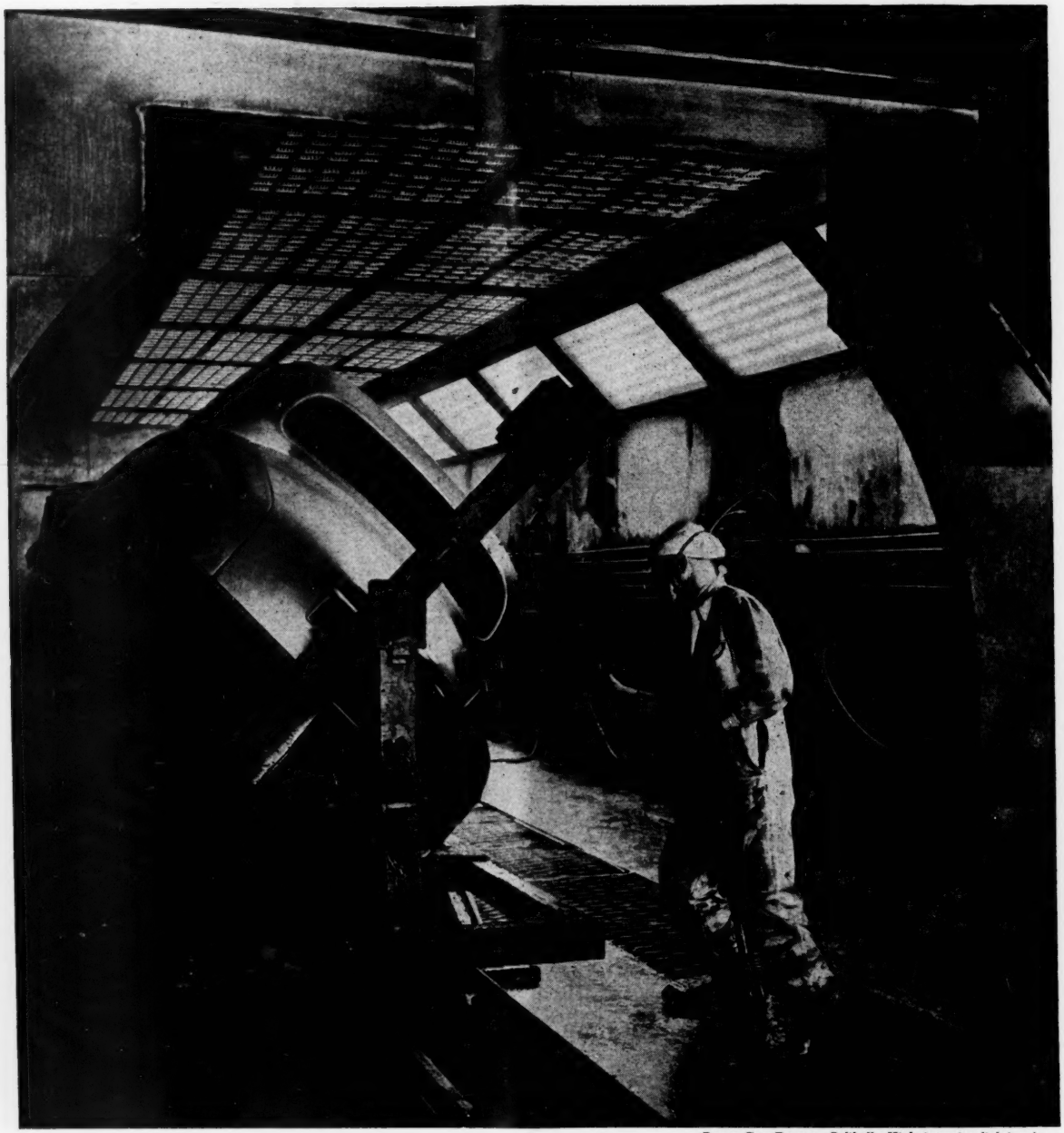

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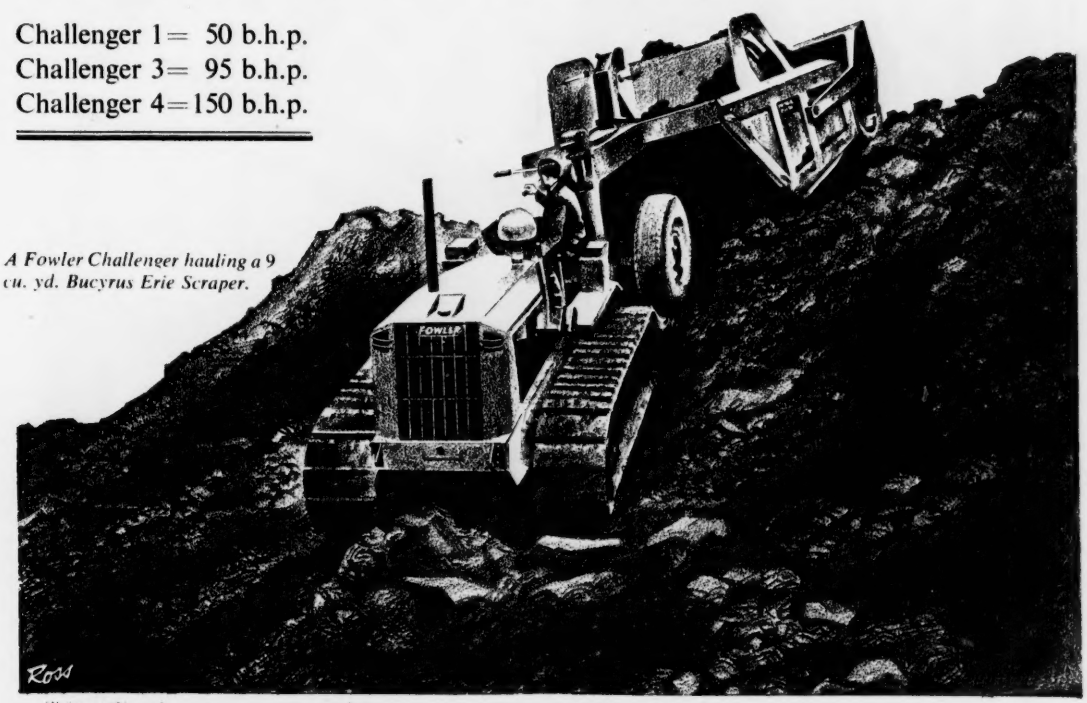
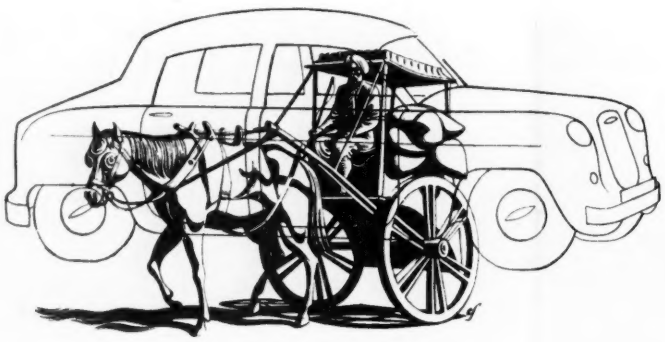


A Fowler Challenger hauling a 9 cu. yd. Bucyrus Erie Scraper.



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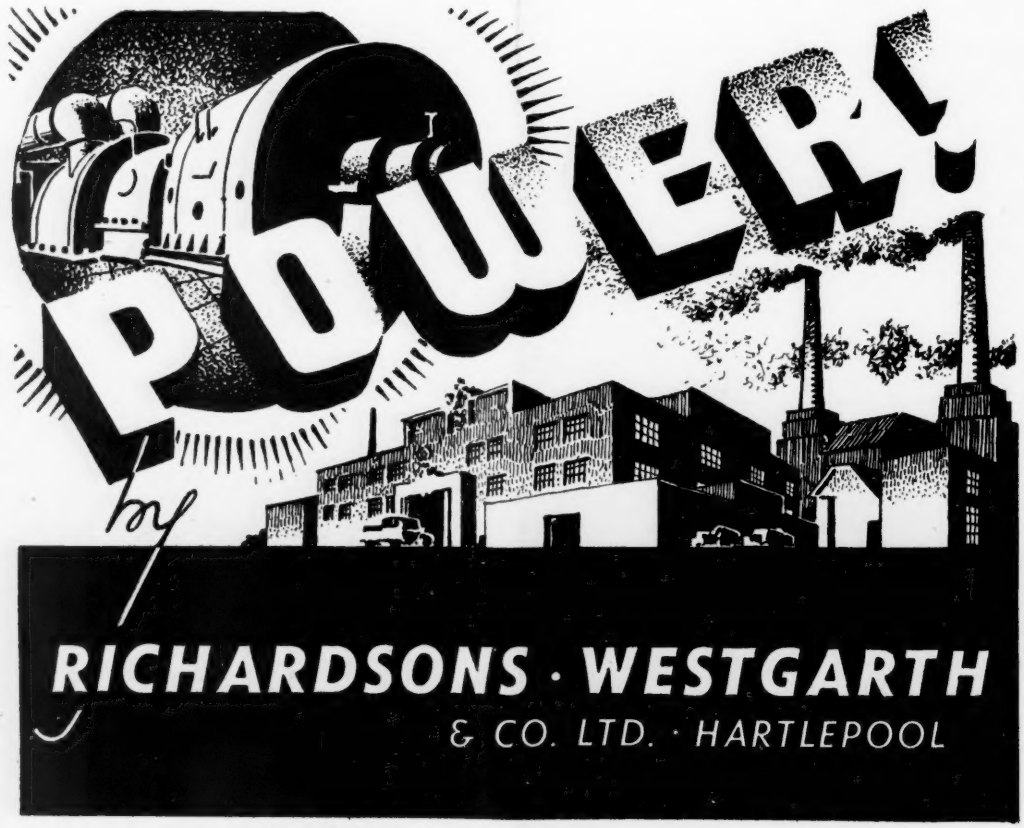

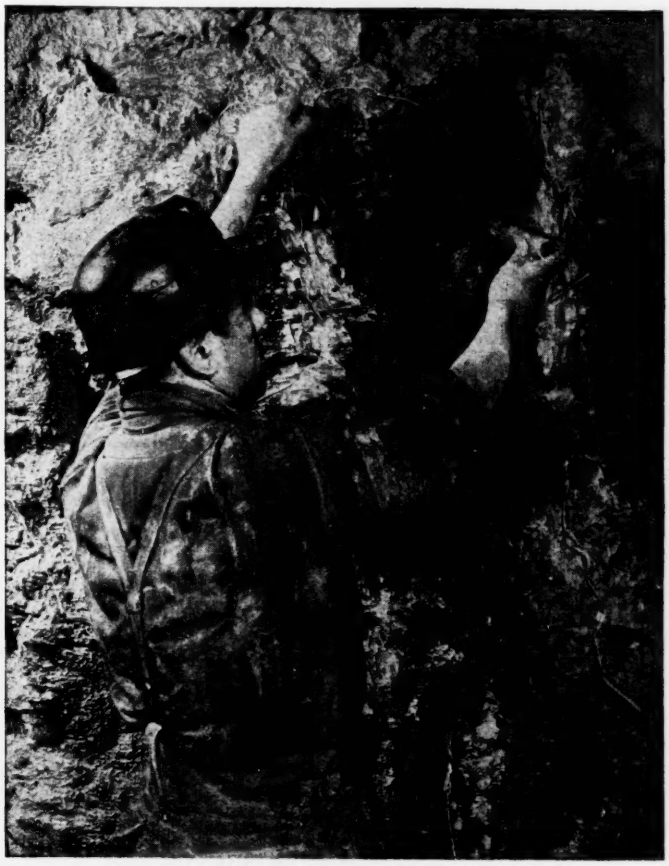

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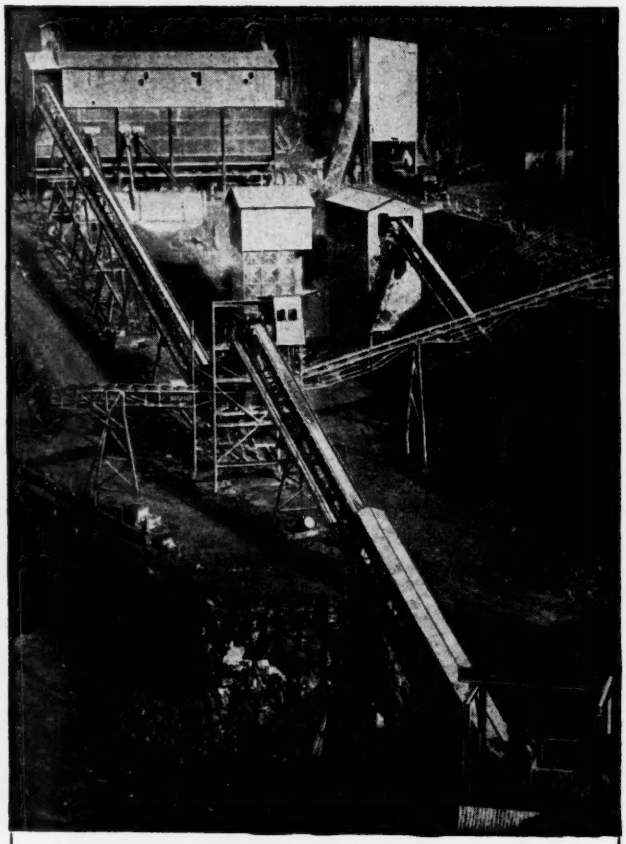

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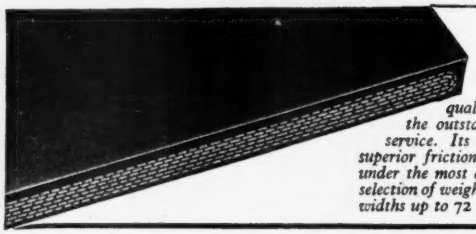

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The Mining Journal

Established 1835

Vol. CCXLI No. 6170 **LONDON, NOVEMBER 20, 1953** **PRICE 8d**

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NOTES AND COMMENTS

The Tin Conference Opens

The long expected Conference of the International Tin Study Group to discuss a revised draft for an International Tin Agreement opened in Geneva on Monday last, and what may be taken to be at any rate a semi-official report on the programme has been broadcast through *Reuter's* Agency in Geneva. For the most part the present draft appears largely to incorporate the two earlier drafts discussed in Paris in 1949 and in Geneva in 1950, though the number of articles has been compressed from 26 to 20. In addition to the revised draft for an International Tin Agreement the establishment of an International Tin Council is proposed. With the exception of some selected plenary meetings all sessions will be behind closed doors.

This re-convened Conference appears to be entering upon its task somewhat more determinedly than its predecessors, and it is expected to last for at least a month instead of a few days, or a week, which suggests that the various problems involved will be discussed with more deliberation than previously, which is clearly desirable. At any rate it cannot be said that the Conference is not representative of world interests. There are delegates from Britain, the British Colonial and attendant territories, Australia, Belgium, Belgian Congo, Brazil, Bolivia, Canada, Denmark, Equador, Egypt, France, Western Germany, Holland, India, Indonesia, Italy, Japan, Lebanon, Norway, Sweden, Switzerland, Siam, Turkey, the United States, and South Africa, besides the presence of observers from the U.S.S.R., Hungary, Yugoslavia, and Persia—in fact, a "United Nation's" assembly. We do not know whether all countries will enjoy an equal vote but if it is so it is to be hoped that the experience of the tail seeking to wag the dog will not be repeated.

The most important item in the agenda is said to be Article 6 dealing with fixing of a maximum and minimum world price for the metal. If we are to have an international instrument regulating the production and supply of tin the fixing of prices on the world market is clearly the most difficult and controversial of the matters with which it will deal, and whatever may be the desirability of such a measure, its practicability in the long run, must remain open to doubt. Ever since the time of the Secretan Syndicate, efforts to stabilize the price of this or that metal by international cartel have sooner or later failed, and at the end of the last war such a project seemed to have been definitely abandoned in the case of tin.

However, to-day we are witnessing the building up of excessive stocks, more particularly in the United States, of agricultural products under the influence of price stabilization accompanied with guarantees of remunerative prices to producers—a practice which just before the great American depression beginning in 1929 led to the ironic enquiry, "how much of your profits came from the pigs which you were paid not to produce?" Too high a price must tend to stimulate over production and curtail consumption while too low a price can only differ in degree from allowing the market to find its own natural level. It is hardly surprising that this problem is regarded as perhaps the most difficult with which the Conference is faced.

The reaction in the United States to previous attempts to fix an arbitrary price and to enforce this have been perhaps the chief stumbling-block in the way of proposals to regulate the tin industry, but in view of what is now occurring there in grain, cattle, cotton, etc., the proponents of restriction and price control may think that their ideas may now have a more favourable climate in United States circles.

The International Tin Study Group have apparently convinced themselves that their proposals will command the support, not only of all the main tin producing countries, but of the majority of consumers. We find it rather difficult to accept this latter postulate—which obviously must embrace users in the U.S., the major consumer—bearing in mind that United States tin consumption in recent years has been more or less stationary, despite enormously increased industrial activity, and that the field of substitutes is steadily widening.

Despite hitherto unsatisfactory results, from the Secretan Syndicate onwards, of seeking to equate consumption and production by means of buffer stocks, the Tin Study Group has found no more attractive mechanism to deal with the problem. Up to a point, stocking of surplus output to obviate extended closing down of operations and dispersal of trained labour *cadres* is economically justifiable but

the resources of private firms are a guarantee that such expedients will not be over strained, a position which when Governments take a hand is always a risk to the general economy. Had it not been for the Second World War, with its sudden removal of output restriction, existing stockpiles would probably have proved too heavy to be endured. In the present proposals a stockpile of 25,000 tons is suggested, but while this would no doubt meet present difficulties it would certainly not be sufficient to stabilize the position were the United States to decide against any further stockpiling and the release of at any rate a portion of her existing stock. What would be welcome is, if the United States authorities would be willing to reveal the present size of the stockpile and to give assurance that it would under no circumstances be reduced, but it is difficult to see how such an effective assurance could be given.

As in earlier Agreements the control of the operations as to buying and selling is to be in the hands of a buffer-stock manager, and is open to the old objections that his operations would be always liable to influence from outside sources, or at least that "leakages" would be always liable to occur.

Such then are some of the difficulties which the present Conference has got to face up to and solve, and it is hardly surprising, therefore, that *Reuter's* communiqué should wind up with a warning that the tin experts assembled have no great expectations of success for the Conference.

A Champion for U.K Metal Mining

It is reported on page 601 of this issue that leading companies interested in metal mining in the United Kingdom are planning the formation of an association to speak for the industry. This announcement will come as welcome news to those who through various other channels have long been stressing to a succession of Governments the significant contribution which domestic mineral production could play in reducing our level of imports, once the fiscal climate in which the industry has to work becomes more congenial. Although in past negotiations with the Government on these matters the voice of the mining industry at home has been heard indirectly through professional bodies (notably the Institution of Mining and Metallurgy) and through local associations (notably the Cornish Mining Development Association), it has not hitherto been heard with an authority comparable to that with which the British Overseas Mining Association has been able to speak on behalf of British mining enterprises abroad. The encouraging implication of this announcement would, however, seem to be that British mining capital is now sufficiently optimistic regarding the potential of the domestic industry to come energetically to its defence.

Past experience in dealing with the Government of the day on the development of domestic mineral resources makes it certain, however, that the proposed association does not face either an easy or a short-term task in stimulating and sustaining official sympathy. What perhaps is needed more than anything else at this stage is a wider and more informed understanding of what the industry has done in the past, what are the potentialities for future production and what are the prerequisites for turning these potentialities into realities. The achievement of this is first and foremost a public relations job, which as always requires for its success both skilled technique and adequate financial resources.

Public opinion has before now been successfully won over on many less promising causes than that which this new association will champion. Indeed, on the face of it, the proposition that we can redress our balance of payments position by the extent that we step up our domestic production of non-ferrous metals should be almost self-evident, even though in recent months the argument must have lost something of its force through the substantial fall in base metal prices which has automatically reduced the cost of our imports. Moreover the fact that these imports are now coming very largely from sterling areas is no argument against the urgency for reducing their volume, at least so long as American markets are ready to absorb surplus sterling area production; and on this point whatever may be the fluctuations in U.S. base metal imports in the short term, few people to-day question the progressively increasing dependence of the States on foreign imports.

No doubt part of the difficulty which has been experienced in arousing official interest in Whitehall lies in the fact that the volume of domestic mineral output and consequently of currency saving, which might reasonably be achieved even under favourable conditions, is so relatively small that Governments have been inclined to shy off legislation discriminating in favour of an industry which seemed likely to offer such comparatively small returns. Nevertheless, the tax reforms necessary are substantially the same as those required by the British overseas mining industry, and, as we have frequently pointed out in these columns, the absence of relief in this latter case must eventually lead to the total eclipse of London as an international mining finance centre. It may not be unreasonable to hope, therefore, that the threat of this major catastrophe may eventually stir the Treasury to action which will also redound to the advantage of the domestic industry.

In any event, in the absence of a comprehensive mineral survey it is not possible for this or any other Government to assert with confidence just how small or how large the contribution of this country's metalliferous mining industry might become. Speaking very roughly outputs of tin, lead and zinc in the U.K. last year compared with the best year in the decade prior to World War II were respectively for tin 1,000 tons compared with 3,250 in 1929, lead 4,000 against 54,000 in 1934, and zinc nil against 11,000 in 1938. At present prices these outputs for 1952 had a value of approximately £950,000 compared with £7,750,000 on the basis of what were admittedly exceptionally good pre-war years. The disparity between these figures is sufficiently striking, even against the background of a total U.K. consumption of these metals in 1952 worth around £44,000,000 at to-day's prices.

Obviously production cannot be built up again to anywhere approaching these pre-war figures without very considerable expenditure on prospecting and subsequently on development and equipping new mines. It is equally obvious that British mining companies cannot be expected to undertake the considerable risk involved in this kind of capital expenditure under a taxation system which does not in practice recognize the principle of depletion allowances and which still makes no adequate provision for amortizing initial capital outlay, whether on exploration, development, or plant and equipment (the 40 per cent initial depreciation allowance in effect doing little more than redistribute tax liability over the years).

The introduction of tax legislation frankly discriminating in favour of the mining industry in the public interest is thus an essential pre-requisite to the investment of private capital in the industry. Given this first and vital step, rapid progress with the prospecting, which must follow, could then be considerably assisted by improvement in the service rendered by the Geological Survey in the publication of maps and memoirs and in the mapping of mining areas. If this service is to be improved the Treasury must find the money and the personnel to make this possible, and it may well be that in so doing it will help to provide the evidence upon which it may itself build a greater confidence in the future potential of the U.K. metal mining industry.

Blast Furnace Size

One of the factors of the iron and steel industry's first post-war development plan was the erection of a number of blast furnaces of much greater capacity than any previously operated in this country and still bigger units are envisaged in the second reconstruction programme which has already been launched. In a quite recent report the Iron and Steel Productivity Committee recommended not less than 25 ft. hearth blast furnaces for rich ores, and 27 ft. hearth furnaces for poorer material, and plans for furnaces of these huge dimensions have already been approved.

At this late hour, the wisdom of building these huge monsters is challenged by no less an authority than Mr. James Mitchell, president of the Iron and Steel Institute and director of Stewarts and Lloyds Ltd. "There is," says Mr. Mitchell, "a case for the multiplication of units rather than for the increase in unit size, and there are many plants where flexibility of operations can be shown to yield such large dividends that an approach based exclusively on productivity and capital costs is not necessarily correct. . . . It has yet to be established, certainly in this country, on local material, that the very large unit offers advantages which counterbalance its inherent weaknesses. The relative flexibility to be attained with smaller blast furnaces is something well worth paying for."

Mr. Mitchell's remarks are entitled to respect and due consideration. Possibly the answer is that the co-existence of small and large units can be justified according to the special needs of the proprietors, but in any case there is now complete agreement upon the technical advantages of the pre-treatment of all blast furnace materials to ensure uniformity in compositions and mechanical size.

Mr. Mitchell is also somewhat critical of the almost slavish adherence of British steel makers to the open hearth system of steel production. He is not the first to suggest that for many purposes hitherto regarded as outside its orbit, the Basic Bessemer process—very much more widely adopted on the Continent—should have serious consideration as an alternative to the Basic Open Hearth. This also is a question for the technicians to determine.

Australia

(From Our Own Correspondent)

Melbourne, November 1.

Since the beginning of the heavy fall in the market price for metals, much concern has been felt for the future of Australia's big copper mines, the recent development and expansion of which has been planned largely upon the increased price for the metal which has prevailed in post-war years. Low grade copper mines, Mount Lyell Mining and Railway Co., and Mount Morgan, have been carrying out important extensions of operations, involving large purchases of plant and equipment, and any substantial fall in the copper market would seriously affect the future of these producers. Mount Isa Mines is fortunate in having high grade ore—almost 4 per cent Cu—compared with 0.7 per cent at Mount Lyell, and 1.2 per cent at Mount Morgan, but the big Mount Isa lode is an underground mining proposition, while the Mount Lyell and Mount Morgan ore bodies are worked by open cut.

It is expected that an early announcement will be made by the Federal Government of a plan to stabilize the position of copper mines working low grade ores. This course follows the disclosure that the big mines will face serious economic difficulties if there is any further fall in the world price for copper. This danger was recently stressed by the Tasmanian Government and the Mount Lyell Company, together with the importance of safeguarding these big undertakings as defence industries. It is understood that the form of aid decided upon will be based on a home price formula and that submissions embodying this proposal have been made to the Prices Commissioners.

TIN MINING ACTIVITIES

Australian tin mining is faced with similar difficulties and dangers to those threatening copper mining. This fact was stressed at a recent annual meeting of Aberfoyle Tin, the large Tasmanian tin-wolfram producer. It was stated that unless strong action were taken to stabilize tin prices in Australia, at a figure that would induce investment of capital in new ventures, the tin mining industry would inevitably die.

Tin is in short supply in Australia and metal is imported to meet local demand. It is an essential wartime metal and internal production should be encouraged. It has long been urged that much help could be given by reconsidering the taxation of tin mining companies, and the dividends from tin mining companies in the hands of shareholders, but relief in this, or other directions, is still awaited. World War II brought about the exhaustion of ore reserves in tin mines of promise, through failure to provide labour and equipment for development; and subsequent lack of encouragement has effectively discouraged provision of new capital to rehabilitate exhausted mines, or to open up others.

The Aberfoyle tin mine is Australia's largest producer of lode tin, and in the financial year June 30, 1953, produced tin and wolfram concentrate which realized a profit of £A477,366. Ore mined and milled was 44,847 tons, and concentrate production was 580 tons of tin, and 448 tons of wolfram concentrate, a total of 1,029 tons. Ore reserves are estimated at 287,301 tons.

The main shaft has been deepened to 1,150 ft. and the life of the mine is assured for a number of years. The several lodes are in sedimentary rocks, but granite has been located at depth in diamond drilling, and has been reached at the bottom of the main shaft. Immediately on the contact a new reef, 12 in. to 24 in. wide, was discovered. Total value per ton of ore milled was £A23 0s. 5d. and costs, including administration, income tax and development, were £A12 8s. 3d. per ton. As an instance of the rise in Australian mining costs, the total costs in 1933 were £A2 8s. 2d. per ton, rising to £A4 14s. 6d. in 1943, and falling to £A3 7s. 11d. in 1945, since when the rise has been steep, particularly from 1950 to 1951 when costs rose in the year from £A6 6s. 2d. to £A11 5s. 9d., due principally to the exorbitant rise in wages and reduction in working hours, a position which only the high prices for metals allowed the company to overcome. The company is under contract with the British Ministry of Supply until November, 1955, which assures a satisfactory price until then for its wolfram products, but arrangements will have to be made for the sale of this product after the expiration of the contract.

TABLELAND TIN

The Tableland Tin Dredging Company was previously Australia's largest producer of alluvial tin, but production ceased with the exhaustion of the Return Creek property. Removal of the large dredge to a new area at Smith's Creek has been in progress, and it is expected that dredging will be commenced in December. The capacity of the dredge is 550 cu. yd. per hour. Much difficulty arose between the company and the Queensland Department of Mines because of stream pollution at the Return Creek area, but it is unlikely that this trouble will arise at Smith's Creek. If dredge recoveries are as indicated by boring, and if the nature of the ground is such as to allow the dredge to work to full capacity, this country's tin production should be increased by 40-50 tons of concentrate per month.

Safety in Mines and Quarries

The promotion of safety throughout the mining and quarrying industries is a subject which as always is attracting the attention of mining engineers in many countries and the following article emphasizes the co-operation existing in this sphere, particularly between the United Kingdom and the United States. The first portion of the article deals with aspects of safety practice in coal mines, and is a condensation of the findings presented in the *Thirty-First Annual Report on Safety in Mines Research*, H.M. Stationery Office, and the *Annual Report of Research and Technological Work on Coal and Related Investigations, Fiscal Year, 1952*, U.S. Bureau of Mines. The second portion of the article deals with the safety record achieved in quarries and opencast coal workings in the United Kingdom in 1951, and is a condensation of the facts presented in H.M. inspectors' report for that year. It is indeed unfortunate that this report was only released for publication on November 10, 1953.

The problems investigated during 1952 in connection with safety in coal mines in the United Kingdom and the United States are described in the recently published annual reports of the Safety in Mines Research Establishment of the Ministry of Fuel and Power and the U.S. Bureau of Mines respectively. British and American workers in this field have acted in the closest co-operation for many years past and the coal mining industry in general has benefited greatly from their joint efforts. Collaboration in this work has, indeed, been widespread for more than a generation, and no fewer than 13 countries were represented at the seventh International Conference of Directors on Mining Research held at Buxton in July.

Explosions, underground fires, new blasting techniques, dust problems and mechanical testing are among the principal subjects dealt with in the British report, and special attention is given to unforeseen difficulties which have arisen in connection with stone-dusting on conveyor roadways. The report concludes with a synopsis of 50 papers and reports published during the year by members of the staff of the Safety in Mines Research Establishment.

DUST ON CONVEYOR ROADWAYS

When the existing methods of stone dusting prescribed in the Regulations were devised, the underground traffic was of a nature which assisted in keeping the coal and stone dusts well mixed and any sample taken from the floor was fairly representative of the composition of the dust cloud that would arise in the event of an explosion. On conveyor and other roadways, where there is no wheel or foot traffic, the deposits of coal and stone dusts tend to become stratified and experiments with such stratified layers in a wind tunnel have shown that the dusts become segregated when they are lifted into the air. An explosive mixture of coal dust and air may therefore be formed even when there is a large amount of stone dust on the floor. The circumstances attending the explosion at Easington Colliery led to the conclusion that this could happen and the Chief Inspector of Mines called for a special investigation of the problem.

Supplementary safeguards which are now being tested include the erection of stone dust barriers and water sprays at intervals along such roadways. Much interest is also being taken in the salt-crust method of immobilizing coal dust so that it cannot be raised by an air current. This method is practised fairly widely in the Rhur and pit trials in Great Britain have shown that it may be used successfully if the humidity of the air does not exceed about 75 per cent. A spray gun is used to apply powdered rock-salt and water until an unbroken deposit is built up over the whole surface to be treated. Any coal dust which then settles on the surface is held by surface tension in the salt solution and when evaporation takes place the dust particles form nuclei for the recrystallization of salt and the process is repeated by spraying with fresh water periodically. A serious objection to this method on conveyor roads may arise if the salt causes excessive corrosion of the metal parts of the conveyor.

It has been found, too, that water spraying without salt has to be done with great care otherwise it may actually increase the danger because some stone dusts are more easily wetted than coal dust and the former would therefore be immobilized and leave the coal dust free to rise into the air. It is suggested that this problem could be solved by adding a small quantity of a water-repellent substance, such as palmetic acid, to the stone dust when it is being prepared in a heated ball mill.

Water infusion is used primarily for the suppression of dust but in most cases it tends to soften the coal and render it easier to work. Consideration is now being given to the possibility of combining shot-firing and water infusion to reduce or even to eliminate the need for undercutting by machines. After a hole has been drilled in the solid coal it is loaded with a suitable charge of explosive and then sealed for infusion and after the introduction of a measured quantity of water the shot is fired whilst the hydraulic pressure is still on. The impulse given to the water by the explosive loosens the coal to a sufficient extent for easy extraction with a much smaller charge than would be required normally and shot-firing under these conditions would become comparatively much safer and less costly. The I.C.I. are collaborating in this work.

The new instruments which have been devised for the non-destructive testing of mining equipment are now being taken round the mines in a specially fitted van to demonstrate their use to the colliery staffs. They include a magnetic crack detector, an ultrasonic flaw detector, a gamma-ray apparatus for the examination of welds by radiography and various accessories for the testing of wire-ropes and mechanical parts of winding and haulage machinery. A surprising number of dangerous defects have been brought to light in the course of these demonstrations which could not have been detected by visual inspection.

CRACK AND FLAW DETECTORS

The magnetic apparatus for the detection of cracks consists of two brass probes for the examination of solid sections, a coil of four turns of thick copper rod for shackle pins and a straight bar to pass through the individual links for the examination of chains. The ultrasonic instrument is used for detecting flaws in crankshafts and other parts of winding and haulage machinery and the gamma-ray apparatus is used for examining welded joints. Radioactive iridium is used as a source of gamma-rays and in the course of the demonstrations out of 298 wrought-iron cage and other chain links examined by this method no fewer than 104 of those which had been welded by blacksmiths in the ordinary way were found to be defective. Electrically welded steel links showed only one defect in a total of 73 and no defects were found in the few links which had been welded by the hydrogen flame. A Geiger counter is now being used instead of a photographic film for preliminary inspection by radiography to speed up the work.

ROOF BOLT SAFETY

An apparatus for testing the holding capacity of a roof bolt after it has been set in position underground has been designed which is capable of loading the bolt up to 15 tons. Tests have shown that the resistance offered by roof bolts to withdrawal vary from 12 tons to as little as 2 tons and it is suggested that more care should be given to the design of the anchorage and tightening arrangements of these

bolts. Only tentative experiments have so far been carried out with roof bolting in Great Britain, but it has become an established practice at a number of mines in the United States.

Studies were made recently at a coal mine in Kentucky of the relative costs of roof bolting with steel and wooden rods and it was found that the same degree of support could be obtained with wood at one-fifth the cost of steel. It is claimed that wood can be used quite successfully with certain types of roofs. Special attention is being given in the United States to the nature of the dust produced when drilling for roof bolting and X-ray defraction methods are used to evaluate the silica content of the dust as a precaution against silicosis.

U.K. QUARRIES AND OPEN CAST WORKINGS

No new legislation was put into operation during 1951, and regulation of quarries continued under the Quarries Act of 1894. Standard codes of special rules continued to be amended at some quarries to enable long articulated wood rammers to be used for charging deep holes, as well as some open cast coal workings in order to substitute for shelters and other safety provisions during particular types of blasting operations. The report notes that blasting practice has altered substantially in recent years, so that a need has emerged for additional guidance to shot firers and others concerned with the safe and efficient use of explosives.

During 1951 an average of 63,200 men were employed in quarries (64,000 in 1950) and output of mineral amounted to 147,543,492 tons including 11,009,800 tons of open cast coal and 191,400 tons of fireclay produced at open cast coal workings. These outputs constitute a substantial increase in total output above 1950 production at 136,946,589 tons of mineral, 12,185,400 tons of open cast coal, and 38,150 tons of fireclay. The output of 1951 constituted a new high productivity level, notwithstanding a 9 per cent reduction in open cast coal output and a reduction of 1¼ per cent in the labour force employed.

In so far as open cast coal workings are concerned, some 8,200 men were employed at the end of 1951. The output of 11,009,800 tons was made possible by the intensive use of mechanization, the amount of spoil sometimes being one-twelfth of the material handled.

TREND TOWARDS INCREASED MECHANIZATION

The continuing trend towards increased mechanization is also indicated by an increase in the use of electrically operated crushing and screening plants of large output capacity, as well as by the tendency towards larger blasts, particularly at quarries where the broken mineral can be stacked for some time without being seriously affected by adverse weather conditions. The well drill method and tunnel blast are widely used in the suitable strata, the method of drilling deep and small diameter vertical holes is also gaining favour, and short delay action detonators continue to be used.

In previous reports mention has been made of the widespread increase in the use of excavators, loading machines and trackless vehicles of all types, and of the dangers that can arise when sound planning and organization have not been accorded the necessary attention. The present accident rate in quarries could undoubtedly be much improved by individual re-examination of loading arrangements at the face and of the transportation systems inside and outside the quarry. It is highly important to note that such re-examinations are often undertaken after serious accidents. The inspectors suggest, however, that if reviews of these situations were made periodically as standard practice a substantial decrease in the accident rate would be recorded. Indeed, a noticeable feature was that during 1951 such units as bulldozers and scrapers, lorries and dumpers, and cranes and excavators were involved in 27 fatal accidents during the year.

THE FATALITIES OF 1951

Considering accidents from other causes, there was an appreciable increase in the damage caused by falls of ground at open cast coal workings and quarries, an increase which is the more disturbing owing to the fact that the use of excavators and the adoption of modern blasting practices have brought about a considerable reduction in the labour force employed in or near the faces.

In all, 62 workers suffered fatal accidents in quarries and open cast coal workings during 1951, an increase of 17 over the previous year, and 165 were reportably injured, an increase of 8 over 1950. The figures for 1951, however, included 13 fatalities and 37 injuries at open cast coal workings, and as this was the first full year of operation since these workings became subject to quarry law, the 1950 figures included only those accidents—10 fatal and 32 non-fatal—which occurred in the seven months following the change over. Excluding for both years the accidents at these coal workings, 1951 saw an increase of 14 fatalities and 3 reportable injuries over 1950.

At quarries, the rate for serious accidents, comprising fatalities and reportable injuries was 3.59 per 1,000 per annum (3.37 in 1950), and showed an accident rate of 1.54 per 1,000,000 tons. The serious accident rate at open cast workings from June 1, 1950, to December 31, 1951, was 6.25 per 1,000. Excluding open cast workings, the serious accident rates for all other quarries was 3.27 (1951) and 2.95 (1950) respectively.

The report regards it as essential that more inspections at quarries by specialist engineers should be carried out to keep pace with increasing mechanization. During 1951 a total of 7,890 inspections were made, 3,579 by inspectors other than inspectors of quarries and 4,311 by inspectors of quarries. Some 4,768 quarries were listed at the end of 1951. During 1950, 7,953 inspections were made, and in view of the fact that the more extensive plants and larger numbers of machines now in use receive more individual attention than has ever been the case previously, the reduction in the total number of inspections is to be regretted but it is stated to be inevitable owing to a decrease of inspectorate staff.

GENERAL DISREGARD OF SAFETY

It is unfortunately apparent from the report that although safety regulations exist to govern quarrying activities in the United Kingdom, and although safety apparel and equipment is provided, many fatal accidents in 1951 were the result of a disregard of regulations or a disinclination to utilize this equipment. In addition, accidents from explosives are far more numerous than they would be if explosives were handled with proper care, and the report urges the need for a proper system of training for shot-firers.

The majority of the accidents concerning machinery could have been avoided by care in operation and by more foresight in day to day maintenance. Proper supervision should, in the majority of cases, reveal the methods and practices adopted by workers to overcome difficulties normally encountered in quarrying operations, and any defects thus revealed should be rectified by adopting and enforcing a safer system of working.

Those accidents resulting from the disregard of safety apparel show that little headway was made in 1951 to induce workers to wear protective clothing. Safety helmets would reduce risk to men employed near a face or in plants where spillage occurs, and it is worthy of consideration that these risks increase with the extension of mechani-

cal aids, as the noise of machinery is likely to smother that of falling spoil. Safety boots were more widely worn during the year under review, but although eye injuries have continued to decrease, the use of goggles would have prevented those which did occur.

Dust extracting equipment continued to be installed at the relevant places. Some of the larger slate quarries continued to use calcium chloride to consolidate the dust on the floors of sheds, while smaller firms used water.

For the report submitted by the inspectors under the Metalliferous Mines Regulations Act, 1872 and 1875, mining properties were included from the areas North Wales, Derbyshire, Cornwall, and other parts of England. The number of diesel driven machines tended to increase under regulations specially established for the particular mine concerned, and electric cap lamps continued to supplant other forms of lighting for personnel, more particularly those demanding use of the naked flame. Seven fatalities occurred during 1951 to metalliferous miners, a increase of four over the preceding year.

Developments in Modern Pulverizing and Crushing Equipment

The effective reduction of metalliferous materials to small size is to-day attracting more attention than at any previous time, with the result that wet extraction, mixation with other materials, and other facets are now being examined with a greater degree of flexibility than has hitherto been possible. The following article discusses types of mills and their applications to this task, with special reference to pilot plants, and it will be noted that the article, which is specially contributed, deals particularly with German equipments.

In the initial investigations of ores, residues, and other metalliferous materials, the matter of suitably reducing to small size has been given greater attention recently than at any time previously. This permits greater flexibility in examining the possibilities of subsequent wet extraction, the necessary fineness to ensure good mixation with other materials, and the production of reliable briquettes for smelting, not to mention systematic sampling, and the like.

In place of pulverizing samples manually by mortar and pestle, one recent model for use on small pilot plants stimulates the hand movement of the pestle by mechanical means. The pestle is made to rotate within the mortar by a lever actuated by a suitably geared motor located at the bottom of the machine.[1] The earlier style was to literally move directly from laboratory experiments to large-scale operations, but to-day, more attention is given to the intermediate pilot plant to ascertain how the process will function in more realistic manner. This form of automatically operated pestle and mortar is likewise assisted by the introduction of miniature ball mills which, in place of dependence on gearing, have the small motor linked up by variable belt connections. The pulverized material is then obtained in almost exactly the same manner as it would be from the large ball mill, and gives an indication of the time and power input likely to be experienced.[2]

MINIATURE BALL MILLS

The practice has been developed still further by the introduction of specially constructed miniature ball mills, which are adapted for the rapid pulverizing of all descriptions of ores, feldspar, quartz, and similar materials, in record time. This is brought about by the shape of the interior of the pan with a corresponding ball diameter, whereby the material to be ground is continuously siezed and intensively comminuted, making greatest use of the available centrifugal force. A circular motion is executed by the axis of the grinding pan, but by means of a guide rod carried in a sliding head at its outer end, the grinding pan itself is prevented from rotating. In this way the balls are compelled to follow a definite path, and the great impact effect of the balls, combined with the enforced motion of the grinding pan, ensures rapid grinding.

Comminution is effected more by impact than by friction, whereby the wear and tear on the balls and the pan are not merely slight, but with the introduction of selected ceramic proprietary products, or agate itself, may be reduced practically to zero. Losses of the material are excluded, as the grinding pan is enclosed in a ground-in cover. In order to further adapt the small mill to the particular class of work on hand, the grinding pan may also be made of hard porcelain, or a special type of cast-iron. A steel rod which controls the motion of the grinding pan, slides in a pivoted head of hardened steel, which adds to the ruggedness of the equipment.

The mill is lubricated by means of two grease cups, and is provided throughout with ball bearings, while by means of a yoke with central lock the grinding pan is held in a simple manner. Drive is by V-belt from an electric motor of some 1/20 h.p. and to utilize the mill to best advantage motor speed should vary between 300 and 800 r.p.m. A specially designed sliding resistance effects the necessary regulation. Two types of models are constructed to meet all requirements, and in three sizes, where the holding capacities of the grinding pan are 15¼, ½, and 0.183 cu. in. respectively.

By this means it is possible to obtain grain sizes of 0.00004 in., and which can even reach colloidal fineness under special conditions.[3]

IMPROVED GRINDING MILLS

Somewhat larger grinding mills with capacities of from 22 to 4.4 lb. per hour have been developed in different sizes and designs to meet the requirements of the material dealt with, and the fineness demanded. On feeding into a hopper, the material, which has already been reduced to small lump size in a jaw breaker, is first taken care of by a pre-crushing worm and forced through a grinding disc against a movable disc. These discs are interchangeable, and differ in accordance with the mass being handled, while as they are alike on both sides, the second side can be used when the first is worn out, and reduces working costs. The degree of fineness can be altered during operations, and regulated as required.

Some of the larger machines have two-sided feed and four grinding discs, while beater disc mills with two-row beater rings have been further developed. These, however, are limited to the softer materials and suffice for copper ores, lead ores, barytes, magnesite, lime, etc., but are not limited to more or less dry materials, as were the earlier disintegrators, since slightly moist, or even slightly oleaginous matter can be successfully handled.

What is to be ground is charged into an oscillating feeder, seized by the rapidly revolving beater disc, and comminuted by the beater rings, while a screening drum which surrounds the grinding chamber holds the material back until reduced to the point where it can pass through the

screen holes. With the hole-size of the interchangeable screens graded from 0.002 to 0.32 in., the output of the smallest of these machines ranges from 11 to 110 lb. per hour, depending on the specified fineness and class of material. Where the mass shows a tough, hard, or fibrous disposition, beater-cross mills are to be recommended, in which it is broken up by beater arms seated on the shaft, and flung against the serrated internal walls of the housing. This is continued until it is reduced to a point where it can fall through an interchangeable steel grate arranged at the bottom, which has a smallest slit width of 0.02 in.

Other types of drum mills are available in 14 sizes of from 0.14 to 12.5 cu. ft. capacity for hand, belt, or motor drive, and as the drum revolves, comminutes the mass in its passage along the walls by the continuous impact of grinding balls.[4] An improved screenless sifting hammer mill comprises a combination of a hammer mill with a cyclone sifter, wherein the granular material separated by the sifter falls by gravity into the mill again, and thus the whole of the material is completely ground to the fineness demanded.[5] A development of this is seen in a blower mill for fine grinding, where an impact disc supports a set of six vanes, which simultaneously serve for pre-crushing. The current of air removes the material more rapidly from the crushing chamber, so that the output is improved and incidentally cools the crushing elements.[6]

For crushing medium-hard materials to a granulation of from 0.004 to 0.02 in., another fresh grit mill supplies a gritty product with little dust, and performs the grinding between a rotary chilled cast-iron grinding plate of special shape and a stationary plate. For reducing materials of the most diverse nature with the addition of liquid, an improved continuous-operation wet crushing mill causes the crushing to take place between a stationary and a rotary plate, and the distance between these can be accurately adjusted to tenths of a millimetre to ensure the required fineness.[7] These various small mills give a reliable criterion of how operations on the large scale will materialize, and instead of being of a miniature character, are sufficiently large to supply the feed for pilot plants in the most exacting manner.

IMPROVED JAW CRUSHERS

The familiar jaw crusher for the preliminary reduction of ores is probably too well known to justify description, but, despite this, improvements have been made alike in the introduction of fresh motions and in the installation of giant crushers. Instead of an idle stroke being used, the crushing action takes place in both directions, whereby the jaw performs crushing to left and to right, thereby increasing the total output by some 50 per cent over normally designed crushers. Two main advantages are gained by this improved motion. For equal crushing power the forces coming upon the individual components of the motion linkage are materially lower, and secondly, twice the number of crushing strokes result with the same speed of the eccentric shaft. In order to attain a maximum working pressure between jaws of 200 tons, a maximum eccentric pressure of 83 tons must be exerted in the normal single-acting jaw crusher, whereas with the double-action crusher, a pressure of not more than 19 tons is necessary.

With the two systems, the mean eccentric pressure is in the ratio of about 5 : 1, but even with the same speed of the eccentric shaft, the frictional work falling upon the bearings, and in its train, the power consumption, are materially lower in the improved crusher, while a higher degree of operating dependability is attained. Whereas the speed of running of a corresponding normal jaw crusher may be 250 r.p.m., that of the double-acting crusher runs at 180 to 200 r.p.m. Appreciably greater eccentricity is demanded in the power transmission arrangement of this crusher, and a smaller working stroke of the jaw is given. In figures, the difference is 2 in. as against 0.8 in., and 0.5 in. as against 1 in., and the higher number of strokes makes good the disadvantage of the smaller opening for the passage of material.

The broken mass leaving the machine can differ but little in size, due to the small difference in the width of gap between the crushing faces in the open and closed condition of the jaws, and hence the double-acting crusher is particularly well adapted for the production of uniform small sized pieces.[8] (The larger designs of jaw crushers tend to enter the field of stone crushing, rather than actual metalliferous industry uses where capacities of upwards of 1,000 tons are handled per hour, and where water-cooled bearings are engaged on all pre-crushers, re-crushers, and granulators.)

TREATMENT OF MATTES

The jaw crusher is an essential item of all smelting operations handling matte, especially in connection with nickel, and the more complex mattes which are noted for their hardness. Where the matte happens to be too poor, and contains a large surplus of iron sulphide, it frequently suffices to simply pass it through the crusher for re-smelting, the ejected pieces being little more than walnut size. A more extreme instance is where the matte is polluted with foreign matter, and requires the addition of fresh fluxes to get rid of this, as in the case of cobalt mattes, and the only alternative is to have the mass finely pulverized after crushing by passing it through a ball mill, or one of the mills described, prior to adding to fresh briquettes for re-smelting. The ball mill proper, in its different ramifications, is probably too familiar a subject to be entered into in detail. It is widely utilized for pulverizing copper mattes and roasted mattes for wet extraction purposes. Some of the complex matte materials, known in the refineries as "metal hash," contain a little of many metals, including, frequently, not a little lead. When this has to be crushed, pellets of lead frequently separate out and are flattened in the form of strips, more particularly where the older forms of pan-mills are still utilized. In the normal ball-mill, the same lead at times tends to spread around the surfaces of the balls, and tends to reduce the rate of pulverizing.

Some of the more specialized mills described for handling fibrous materials claim to make good this defect, but in normal practice it is customary to get rid of this free lead in the converter described for this purpose, particularly since the mass might become soft if too extensive pulverizing is necessary.

Reference has not been made to improvements in attrition mills which have been developed so widely with pulverized coal furnaces, as these are only infrequently used in the metalliferous industries, except for the actual fuel. Worthy of mention, however, are the crushers for working hard white quartzite with a compressive strength of between 35 and 42.5 lb. per sq. in., and which crush 1,000 tons per eight-hour shift, i.e. down to $\frac{3}{4}$ in. size, and which may yet find further extensions in the metallurgical field.[9]

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6. Maschinenfabrik Geislengen-Steige, Heidelberg.
7. Gustav Eirich, Hardheim.
8. Dr. Gaspary & Co., Markranstadt, Leipzig.
9. Joseph Vogele, Mannheim.

TECHNICAL BRIEFS

Coloured Aerial Photography in Prospecting

One of the new methods in prospecting is the use of large scale vertical stereoscopic colour aerial photography. A study of dozens of large and small mining districts, including most of the important ones in the Western United States, during the past six years, has shown that there is an important class of information provided only by colour aerial photography. This information was given in a paper by Mr. P. A. Laylander, Geologist, Aerogeological Exploration, presented before the Metal and Nonmetallic Mining Convention of the American Mining Congress in September, 1953.

The information concerned is the graphic three-dimensional presentation of the finer details of the tones, textures and patterns of the structure—alteration—ore relationships. Much information concerning the types and grades of hydrothermal alteration aureoles is seen only with considerable difficulty by painstaking ground study. The colour photographs allow rapid observation of large areas at one time with best lighting and perspective. A characteristic of the colour photographs is a much greater sensitivity to certain slight but important changes in colour and tone of the altered rocks, necessary in perceiving zonal relationships and predicting ore loci. A much finer structural picture is presented by stereoscopic study of the colour photographs than by ground study in most instances. The colour photographs are also superior to black and white photographs for such studies.

The study of a number of important mining districts with the aid of the colour photographs provides a good basis for testing and developing ore genesis theory. Many geological maps and reports have important errors both of descriptive and analytical nature, but colour photographs provide critical observations of the difference in colours, tones, and textures of the granite rocks together with structural relationships with surrounding rocks and the effects of heat and solution on surrounding rocks. The complete picture usually provides clear-cut distinction between the granitic types. Where metamorphosed archaen gneiss has been identified as tertiary magmatic instrusive, the analysis of the ore genesis has naturally been incorrect.

In many instances, regional thrusts which controlled emplacement of tertiary instrusives have not been recognized, although sometimes the true situation can be inferred from marked differences in structural patterns on either side of a line. In these instances colour photographs provide a rapid, effective means of gathering the necessary information which often occurs in inaccessible areas. It is believed that the much more rapid and improved observations possible with the use of the colour photography will provide important regional and district geologic information leading to the discovery of important ore deposits.

New Flame Retarding Thermoplastics

The active research now being made into the effective construction of non-flammable conveyor belts and other underground installations, has promoted a revision of the construction of certain more traditional materials, and has in addition speeded a scientific approach to the construction of materials new to the industrial sphere. It has now been announced in *Modern Plastics*, that to expand the usefulness of thermoplastic materials, polyethylene, polystyrene, and cellulose acetate butyrate plastic, and also natural and synthetic rubber, the Diamond Alkali Co., of America, has developed an additive mixture that makes them self-extinguishing in case of fire.

The essential ingredients of the fireproofing mixture are Chlorowax 70, a chlorinated paraffin wax containing 70 per cent chlorine by weight, which has been used for flameproofing textiles, and antimony trioxide, which is commonly called antimony oxide. It also contains various plasticizers, pigments, and extenders that are incorporated in ordinary plastic compounds; and a substance that helps the compounds to withstand processing and use at high temperatures without deteriorating.

The flame-retarding additives become homogeneous with any of various plastic compounds during conventional milling on equipment commonly used for processing. The addition of suitable stabilizers and lubricants, together with special care during mixing and moulding, helps to keep the temperature below 425 deg. F. and to prevent decomposition of the chlorinated paraffin.

Treated polyethylene plastics are reported to have excellent electrical properties, which remain constant even after long immersion in water and long exposure to high temperatures. The additives have little effect on the beneficial mechanical properties. Processing can be effected either by injection moulding or by extrusion. Because they can be extruded on wire at high speeds, these plastics are especially useful as flame-retarding dielectric materials for coating cables and conductors in neon signs and television equipment.

Flame-retarding polystyrenes are stated to be uniform in composition and easy to mould. In mechanical properties, they are somewhat less shock-resistant and more subject to distortion from great heat than untreated polystyrene. Treated cellulose acetate butyrate retains all the desirable properties of butyrates.

The Wetting of Airborne Silica Dusts

Further physicochemical studies on dusts have been carried out by Cumming and co-workers (J. Appl. Chem. 2, 413, 1952). They describe a photo-electric apparatus which may be used to measure the settling rate of a suspended dust cloud. From the results obtained with this device, an empirical settling factor may be derived and this may be used to compare the settling of different dusts under varying conditions. Five graded dusts were used in the experiments (less than 1, 1, 1-3, 3-5, and 5-10 μ) and a number of important conclusions were reached.

It was found that the settling factor of silica dusts is not significantly affected by changes in relative humidity of from 0 per cent to 100 per cent. The reduction in dust by water sprays alone is less than 50 per cent whereas for sprays of wetting agent solutions the reduction is 60-70 per cent. The nature of the wetting agent did not materially affect this figure. The actual droplet size of the spray was significant, the smaller droplet being more effective. Dusts with a particle size of about 1 μ are affected most of all by spraying.

Refining Copper in Rotary Furnace

The refining of copper in a rotary drum furnace has been described by A. Geleji and J. Schey (Acta Tech. Acad. Sci. Hung. 3, 393, 1952). This type of furnace, say the authors, is superior to the stationary reverberatory type since the heating is achieved from all sides and there is active participation of the whole of the furnace lining.

In this type of furnace the oxidation of impurities takes place more readily and refining takes only between 3 and 6 hours compared with the 24 hours in the reverberatory furnace. The thermal efficiency is greater than 30 per cent. The inside diameter (D) of a furnace to hold G tonnes is $a\sqrt{G}$ and the length b.D where a and b are constants for a given capacity. The fuel required (kg./hr.) is given by v.G.k.3,600/H where v is the volume of the flame, k is the heat liberated in kcal/cu. in. sec. and H is the lower heat value of the fuel in kcal/kg.

A Unique Alloy

The element beryllium was discovered in the 1790s and after more than a century of comparative obscurity, in the last twenty years has become a well-known additive to copper base alloys. Through a simple heating process, beryllium copper may be given the strength and durability of mild steels while still retaining a high degree of electrical and thermal conductivity, and is in addition a low cost product. Many new applications of beryllium copper have greatly increased supply of the basic alloy.

An interesting pamphlet published by The Beryllium Corporation presents a cross section of the uses and adaptability of the alloy. Beryllium copper is used in aircraft and motor car engines and shows an excellent resistance to anelastic behaviour, while it is used in addition for the construction of chain saws and similar all-weather production tools. Bearings, wire, terminal switches and electronic applications are also included in the uses of the alloy.

The Level of Base Metal Prices

Last week we published extracts from an important paper which was recently presented before the American Mining Congress giving a view of the long-term outlook for the metals. This week in contrast we quote at length from an article published this month in Australia, which seeks to forecast the probable price range of the principal base metals in the immediate future. These calculations are deduced primarily from an historical study of past price trends and like all studies of this sort should therefore be treated with due reserve. The author is Dr. J. A. Dunn, Chief Mineral Economist of the Australian Bureau of Mineral Resources. The article appears in full in the *Australian Mineral Industry, Quarterly Review*, Vol. 6, No. 2.

The London Metal Exchange has now resumed dealings in the four principal base metals—lead, zinc, copper and tin. Before the war, the Exchange quotations for these metals varied quite widely, but there was a general level of trend for each—a price plateau with hills and valleys of price fluctuations. From mid-1950 and until recent months the disturbing effects of the Korean war lifted prices to what were obviously great peaks, towering over some new plateau to which world-wide inflation has lifted the general level of trend of each metal.

International events will largely determine the degree of future inflation. However, we may hope that we have before us a prolonged period of open market dealing in the metals. To mining engineers and to others, who have to assess the possibilities of developing new ore bodies, or the future of their economic interests in the metal industry, the anticipation of prices is all-important. Can we deduce the general levels of the new plateaus to which, under normal trading and present general inflation, the prices of these base metals should conform?

Past price history provides the basis of our assessment of the future. The four graphs overleaf illustrate the variations of prices of copper, lead, zinc and tin on the London Metal Exchange and in the United States since the year 1900. The graphs illustrate the annual maxima and minima for each metal; official controlled prices are shown for the years of controls. On each graph the running average price commencing from 1900 is shown (it has no significance after the commencement of World War II); its sole purpose is to serve as a guide in determining the trend, having in mind that the running average lags considerably behind any change in trend.

THE BROAD HISTORICAL PRICE MOVEMENTS

On each graph, a broad band, illustrating the trend and general price range, cuts through the troughs and peaks of the maxima-minima prices. The lower limit of the band represents the price below which, except for abnormal circumstances or occasional market bids in slack periods, prices do not fall and below which only a few low cost mines can continue profitably in operation. The position of this lower limit over a period of time leaves little scope for variation in opinion, particularly if determined in conjunction with an appreciation of the circumstances of the times. The upper limit may be susceptible to a somewhat wider difference of opinion, for our purpose, price peaks are ignored, particularly in those periods of shortage when prices may soar far above the general level. The width of the band represents approximately the general range of prices in average trading through the years.

The following broad features are typical of these four metals: Prices were reasonably stable in the early years of the century, before World War I, with a general overall slight upward trend. War demand sent prices to abnormal heights, followed by a brief collapse in the early 1920's, but to a general level rather above that of pre-war in keeping with the slight degree of inflation at that time. Improved demand maintained prices at a high or reasonable level to 1929, but the subsequent depression carried prices down to record nadirs below the floor of the general price range. Then, in the mid-1930's, ensued the climb from the depression—earlier in the case of tin—to the more reasonable prices just preceding the commencement of World War II. In the interval between the two wars, discounting the abnormal sagging effect of the depression period on the general trend, there was a downward tendency of copper, lead and zinc prices. This tendency was flattening off just before World War II and perhaps turning upwards in some cases, but to introduce flexures in this trend band would be an unreal refinement. Between the two wars the general level of tin prices continued slightly upwards but prices fluctuated widely.

During World War II, prices were fixed at reasonably high levels in order to encourage production. When the war terminated, world-wide inflation began to lift prices to a higher level, but superimposed on this, from mid-1950 to recent months, were the effects of shortages introduced by the Korean War, under which prices of lead, zinc and tin reached fantastic levels; official prices of copper, though high, were reasonable. Now, reminiscent of the pattern after World War I, prices are returning to the new levels which inflation of recent years requires.

The object of this note is to estimate the future level of the general price range of each of the four principal base metals.

Of the many factors which influence price, some are fundamental in determining the general level and trend of prices, others have only a transitory effect and introduce year to year fluctuations. Some of the factors may be briefly mentioned.

MAIN FACTORS AFFECTING PRICES

Throughout the years, short-term influences on price include seasonal changes in consumption, stocks (in hands of the consumer, producer, and Exchange), strikes or breakdowns at mines, smelters, consumer plants or along the line of supply, and weather conditions in important producing areas; even the momentary financial position of a dealer may introduce an abnormal price. Factors which have varying terms of influence include currency controls, changes in rates of exchange, national and international political decisions, agreements between powerful groups of producers or producer countries, or between producer and consumer countries, tariff levels of dominating consumer countries, taxes on production or exports in dominating producing countries, changes in use of metals, and world-wide economic cycles.

The fundamental broad basis of price, around which all the above factors give rise to peaks and troughs is, however, the cost of production. The trend of cost determines the trend of price over the years. Thus the mining of the great low-grade copper deposits in U.S.A., the most important consumer country, and the scope they permitted for increased efficiency was a dominant factor in setting the copper price level and its downward trend between the two wars. The extent to which copper costs were reduced is reflected in the position of the curve of running average price; for copper in the 1930's this is well above the ceiling of the general price range band, whilst for lead and zinc it remains within the limits of their price range.

HOW FAR DO PRODUCTION COSTS DETERMINE PRICES?

In considering cost of production as the underlying factor in price levels and trends we are, of course, dealing with a great number of producers each of whom has a different cost level, some low-cost, some medium-cost, others high-cost and marginal. By-products of some orebodies permit credits which considerably decrease costs of the main metal; credits from the high gold content of Norandra ore (Quebec) before the war reduced costs of copper production there to 4.35 c. a lb. The high-grade copper ores of Northern Rhodesia yield metal at costs far below those of most American mines. In the lead-zinc field, the grade at Broken Hill is the highest of any comparably important producer, although wage bonuses and royalties reduce the advantage. It is an over-simplification to say that those producers whose cost levels permit them to satisfy demand at any time determine the general minimum level of price—mining is rather more resilient than that, in grade, efficiency, and financial ability to carry on for a period despite uneconomic prices. However, cutting off the extreme peaks (such as those of the mid-1920's) and the extreme troughs (such as in the 1930's depression period when many mines

closed down for some years), there is a general level of demand for each metal, and it is the cost of production of those mines which provide the backbone of supply of the particular metal which underlies the broad range of price and its trend over a period of years.

In open marketing the producers' cost influence on price is indirect and passive. During a period of low demand, although producers are anxious to sell output and compete for buyers, it is the latter, by taking advantage of that competition, who determine the price. With falling demand the price may become so low that weaker producers are pressed out of operation. As demand increases, bidding amongst consumers for available supplies determines the level to which prices may be lifted. Thus, even at the lower margin of profit, in the above sense it is the consumer who finally determines the financial welfare of the producer.

THE POST-WAR PICTURE

World inflation has carried costs to new levels, and not uniformly in different countries. Sharp changes in exchange rates have also considerably altered the significance of costs as between various countries, particularly since 1949, although over the years such differences tend to fade. In the maze of factors, the influence of the dominant consumer to-day, the United States, must be considered.

Relative to world production and consumption, the United States position is as follows: lead, production 20 per cent, consumption 30 per cent; zinc, production 30 per cent, consumption 40 per cent; copper, production 30 per cent, consumption 50 per cent. U.S. consumption in these metals is far greater than pre-war whilst the domestic supply position is relatively less to the extent that from being an exporter she is now a heavy importer of these metals. U.S. must maintain her production in these metals, and will presumably continue to do so by means of tariff protection.

Were there no U.S. tariff protection, and prices freely competitive, the U.S. production of these metals forms so large and vital a proportion of the world supply that the cost of U.S. production would be a dominant factor in governing the levels of the general price range. In consequence of U.S. tariff protection it might be contended that prices for the rest of the world's production are governed by factors outside of the U.S. But some 10 per cent of the rest of the world's lead, 10 per cent of zinc, and 20 per cent of copper find a market in the U.S. These are very important quantities and have a definite influence on world prices, notwithstanding that 80-90 per cent of the rest of the world's production must find markets outside of the U.S. A further rather hidden influence is the effect which the manufactured products of these metals exported from U.S. in competition with other countries have on world prices. The U.S. tariff steps down the price of these metals elsewhere relative to U.S. Factors such as supply and demand outside of U.S. do affect prices on the London Metal Exchange at any time, tending to lead to somewhat lower prices still, except in period of shortage. By and large, the general level of U.S. prices as governed by the level of U.S. costs of production will be the underlying influence on the new level of world prices of each of these metals, but superimposed on this level will be the day-to-day fluctuations in markets outside the U.S.—fluctuations which will be reflected back to the U.S.

It is of interest to comment here on a recent proposal to impose a sliding scale tariff on imports of lead and zinc into the U.S. Such a tariff has as its object the maintenance of a floor price in the U.S., in order to free domestic producers from the competitive effect of overseas prices. The effect would be to shift the pressure entirely on to producers outside the U.S., leading to a further and continuous depression of prices in other countries.

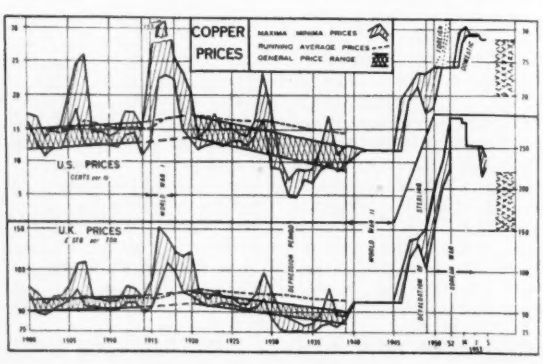
Accepting the underlying influence of U.S. production costs on the level of the general price range of copper, lead and zinc, the relation of the new to the pre-war level may be expected to be in proportion to increased costs. Two items are all-important in determining cost levels: wages and efficiency. The wage factor goes beyond the wages paid out by a particular metal producer, and includes the wage content of the capital and consumer goods required in production. Higher hourly wages may be compensated to varying degrees by increased efficiency —in general it is the relation between these two which determines the upward or downward cost trend. A relatively high wage rate may not mean a relatively high cost—we have the example to-day in U.S. of high hourly wages relative to other countries, although for the majority of commodities actual costs are not commensurately high.

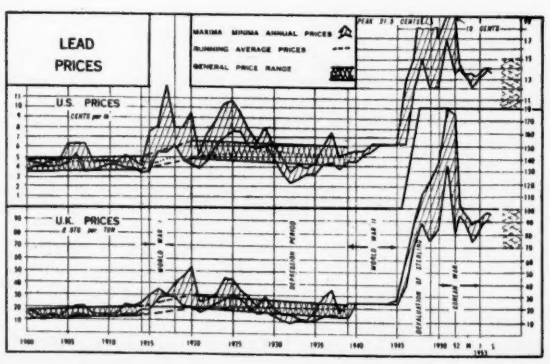
TREND OF WAGE RATES AND EFFICIENCIES

In general U.S. wages are approximately 2.6 times higher than pre-war. For copper, the strong effect of increased efficiency in reducing costs before the war has continued (in illustration, although the U.S. general price range of copper just before the war was 9-12.5 c., U.S. producers were in quite a profitable position at 18.5 c. a lb. early in 1950); the overall increase in costs in U.S.A. to-day would be of the order of 2.2 times pre-war. For lead and zinc, there have been considerable changes in ore reserves, particularly in U.S.A., and the ratio of zinc to lead is higher in several new ore bodies; the overall grade of ore mined is lower than pre-war and has minimized the effect on cost of increased technical efficiency. General increases in costs of lead and zinc in U.S.A. will be rather higher than in the case of copper and up to 2.5 times pre-war. We may expect the level of the general price range of these metals in the U.S. to be correspondingly higher than pre-war. The level of the U.K. range will follow according to the exchange rate, with tariff and freight adjustments.

It may be remarked that in Canada, where production of these three metals is also considerable, costs have tended to increase to an extent similar to that in the U.S.A. Canadian production costs would, on the whole, support the U.S. influence on the price of lead, zinc and copper.

For tin, there is no element of U.S. cost in production (except cost of smelting at the Texas plant), and the conclusions concerning copper, lead, zinc, are not applicable. The operating costs of a number of Eastern producers to-day have increased an average of 3.4 times those of pre-war, the range being from 2.2 to 5. Capital costs of new dredges have risen to more than 3 times pre-war, and to producers who have purchased new dredges amortization represents a very considerable addition to costs. Cost of exploration have considerably increased, and generally new ground has a lower tin content than earlier leases. In Africa and Bolivia, costs have risen to an even greater extent. In dredging there is little opportunity for any great increase in efficiency, and as a rule there is only limited scope for variation of grade worked on existing properties. Summarizing the rela-





tive position as a whole to-day as compared with pre-war, it is reasonable to admit of a rise in overall costs of at least 3.2 times. Before the war, the level of tin prices was governed partly by an International Tin Agreement. In the absence of such an agreement in the future the new price level could be well below the proportionate increase of costs of the dominant producers.

The above are the broad factors on which may be based an anticipation of the future price levels. The specific figures in the following remarks are not to be confused with any short term price ranges; they are the limits between which prices may be expected to range, breaking through the floor in an abnormal recession, or through the ceiling during heavy demand.

COPPER

Except for a brief period towards the end of the 1920's the price of copper showed a clear downward tendency between the two World Wars. During this period the great low grade deposits of America reached a high stage of development and from the early 1930's the Northern Rhodesian deposits began to add materially to production. The slide to the depression nadir in the U.S. was more abrupt and more severe than for any other base metal. Except for the depression period the U.S. domestic price was, in general, 1½ to 2 c. above the U.K. price.

To-day, the movement of a large proportion of world copper is towards the U.S.. Although the U.S. tariff on copper is at present suspended, it will be brought into force at any time to maintain local production. U.S. costs of copper production will be the underlying factor in the general price range, despite the far lower cost of Northern Rhodesian copper.

The pre-war U.S. general price range was about 9-12.5 c. per lb., the U.K. range being about £stg.35-50 a ton. The U.S. range to-day, in keeping with increase of costs, would be about 20-28 c. a lb., the comparable U.K. range being £stg.150 to £stg.220 per ton—when the U.S. tariff is introduced, the U.K. range could be commensurately lower. Present prices are somewhat above these ceilings.

Recent alteration of the exchange rate of the Chilean peso may change the high-price copper policy of the Chilean Government. However, if, as before the war, a producers' arrangement were made on output of copper from Chile, Africa, and also Canada, the U.K. price could tend towards the upper part of the range.

LEAD

Between the two World Wars, the general price trend of lead was downwards, with a considerable sag in the depression period—recovery from the depression commenced in 1935. In general, allowing for variation of exchange rates, the U.K. minimum price of lead was 1-1.75 c. less than the U.S. price. Before the war, the general price range was about 4-6 c. in the U.S. and about £13-£23 in U.K.

On present costs, it would not be unreasonable to expect an increase in the U.S. general price range to 10-15 c. per lb. Since the war U.S. has become a considerable importer of lead. Transatlantic freights besides U.S. tariff have to be taken into consideration. Assuming no change in tariffs, the equivalent U.K. general price range should be approximately £70-£100 per l.ton. As 90 per cent of production other than that of U.S. must find a market outside of that country, the day-to-day market pressure will be on costs in extra-U.S. countries. Thus the average U.K. price will usually tend towards the lower part of the range.

ZINC

The price history of zinc is little different from that of lead; fluctuations in periods of strong demand tend to be more pronounced. In the 1930's the floor price and the annual average price generally tended to be just above lead. Allowing for variation in exchange rates, between the two wars the U.K. minimum price was 1-2 c. below the U.S. price; towards the end of the 1930's it was generally 1½-2 c. lower. The U.S. general price range just before the war was about 4.5-6.5 c., the U.K. range being £14-£24.

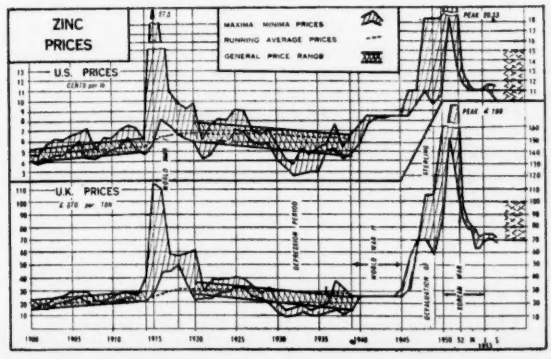
The pre-war costs of zinc production marched with those of lead. Particularly in U.S., an increasing amount of ore is being mined in which zinc greatly dominates over lead, and the relative cost picture is changing. For the present it is reasonable to expect a general price range similar to lead, 10 to 15 c. a lb. in the U.S., with an equivalent U.K. range about £70-£100 a ton, assuming no change in U.S. tariff. A change in U.S. tariff could alter the picture.

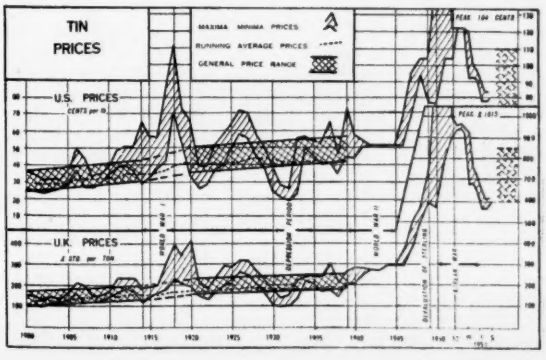
Some recent prices of zinc have been below the above U.K. floor. Unlike lead, zinc was subject to international allocation during the recent period of controls, and as always in such circumstances the stock position became abnormal. Some time may elapse before zinc recovers. Apart from emergency periods, zinc supply capacity will now be relatively greater than for lead. Zinc is more susceptible than lead to replacement for some purposes by aluminium and certain alloys. It will not be surprising if, in the long term, zinc maintains a somewhat lower price level than lead, in contrast to their pre-war relative positions.

TIN

After World War I tin prices fluctuated more widely than before 1914, and were at a rather higher level. Between the two wars the general price range showed a slight upward trend. The International Tin Agreement which came into force in the 1930's helped to shorten the effects of the depression on the tin industry and by 1933 the level of the general price range was well maintained. It has been said by some critics of the Tin Agreement of the 1930's that its main object was to maintain prices at or near boom levels. A glance at the graph of tin prices will at once dispel this fallacy—recognizing the general price trend, prices of tin in the 1930's were reasonable and far below boom levels. U.S. prices tended to be about 2½-3 c. above the equivalent U.K. prices. Before the war the limits of the general price range were about £190 and £260 in the U.K. and 42 and 57 c. in the U.S.

To-day, the corresponding limits of the general price range would be at least £600 and £850 in the U.K. and 75 and 110 c. in the U.S.—these estimates are almost certainly on the low side. In the absence of an international tin agreement, in view of the considerable over-production capacity, prices could well extend to extremes particularly below the floor of this range. Under an international agreement which looked beyond the moment, and had as one of its objectives the stimulation of exploration and development for the future, and further recognized that the general grade of ground and ore worked will be lower than before the war, a floor price of £650 would not be unreasonable. Wage increases in the East will lead to a slight upward trend in price.





METALS, MINERALS AND ALLOYS

In its latest issue, *Asbestos*, the Philadelphia monthly periodical organ of that trade, says that general business continues good; change of models in automobile plants is causing some localized unemployment in these plants and those of their suppliers. The full effect of Government cut-backs in expenditure for armaments has not yet been felt, although it is becoming more widespread. Financial markets have taken a turn for the better recently. The predicted slow-down in business has not, up to now, reached serious proportions except in isolated cases. The fact is that a majority of manufacturers seem to feel their own company's prospects are still quite good. So long as this sentiment prevails a major setback appears unlikely.

COPPER.—It is reported from New York that consumers are now starting to cover their December requirements at the existing price level of 29½-30 c. per lb. and consequently that this price is expected to be maintained for the rest of the year at any rate. This seems to suggest that opinion in United States metal circles is that nothing further will develop as regards the disposal of the Chilean surplus for some time to come. Meanwhile of course current needs must be met. The view that nothing further is likely to transpire in the near future regarding the ultimate disposal of the Chilean stocks is supported by the statement towards the end of last week by the Chilean Minister for Foreign Affairs, Sr. Fenner, that talks between Santiago and Washington had definitely broken down, that there were no signs that they would be renewed, and if they were it would be at the instance of his Government when it thought convenient to do so. The lengthy consultations which preceded Sr. Fenner's statement were attended by the Ministers of Finance and Mines and by the head of the Banco Centrale as well as by Sr. Luis McKenna, who on his return to the United States gave a full report of the negotiations. Sr. Fenner further declared that any projects for the sale of strategic products by Chile would be exclusively with Western countries. It has always seemed that Chile would be very loath to enter into arrangements with the Soviets and so jeopardize future American aid. Thus though the market anxiety as to the disposal of the Chilean stock is obviated for the moment, it is merely postponed and must become more pressing as time goes on, and for what it may be worth quotations of futures on the Commodity Exchange are progressively lower month by month next year.

The Copper Institute figures for October give the U.S. output of crude as 92,321 s.tons, against 86,248 in September. The refined output was 126,138 s.tons (114,760 in September). Deliveries totalled 110,159 s.tons (104,886 in September). Stocks at the end of October are computed at 84,303 s.tons (72,907 end September). Outside the U.S. October output of crude is given as 116,390 s.tons (117,569 in September). Refined output was 92,632 s.tons (70,843 in September). Stocks again increased largely—owing presumably to the increasing stock in Chile—to 258,681 s.tons at the end of the month compared with 236,336 at the end of September. Thus it will be seen that total world stocks again increased substantially to a total of 342,984 s.tons as against 309,243 a month earlier, an increase of 33,741 tons during the month when total deliveries were 180,417 tons.

Arrangements for the financing of the Kalembe Mine near the western boundary of Uganda, between Frobishers Ltd., the Colonial Development Corporation and the Uganda Development Corporation, have been announced. To bring the mine into commission an expenditure of £6,500,000 is envisaged of which Frobishers have already spent £2,000,000. It is planned to extract some 40,000 tons of ore monthly, or say, 480,000 tons a year, to yield 9,000 tons of copper and 450 tons of cobalt annually. Proved ore reserves are given as 4,000,000 tons with 6,000,000 tons indicated. An electric smelter is to be erected at Jinja to be supplied with power from Owen Falls. Cobalt concentrates will be produced at Kalembe and exported for refining. The project was described at length in our issue of October 17, 1952.

The outcome of the various disputes and conferences between the Copperbelt companies and the European unions in Northern Rhodesia seem to be resulting in agreement. At Roan Antelope, the company will provide for the transport of the staff where necessary and the union has consequently withdrawn its claim for additional pay on this account. The Mufulira Branch of the European Mine Workers' Union will not take strike action over the reinstatement of a worker dismissed on medical grounds.

It is expected that Dr. Eisenhower's report on his South American tour will be issued shortly. Meanwhile negotiations for loans by agencies like the Export-Import Bank are reported to be frozen including a loan for the development of the A.S. and R.'s Tocquepala copper project in Peru.

Japansese production in September was 8,935 tonnes, the highest since the war. Home consumption is increasing as well as exports, especially to Argentina.

LEAD.—Lead has been a quiet market in London this week with moderate turnovers. In the United States there has been a steady demand for prompt material. Stocks of refined in the hands of smelters and refiners showed a small reduction at the beginning of October at 42,643 s.tons compared with 43,355 a month earlier. Domestic mine output for the third quarter of the year was very steady at just over 26,000 s.tons per month. Unless a big change takes place in the current quarter, domestic mine output in 1953 looks like being the lowest since 1946, and no doubt the proponents of increased import duties will make the most of this in present tariff hearings.

TIN.—Tin prices have firmed up this week both on the Metal Exchange and in New York, where the price of 83.75 c. was quoted on Wednesday, presumably on expectations of price stabilization coming out of the International Tin Conference, the initiation of which is discussed in our Notes and Comments elsewhere in this issue. Otherwise there is not much news. Imports of tin ore into the Straits in October were heavier than of late totalling 1,089 tons of concentrates of which Thailand supplied 958, Burma 116, Indonesia 2, and other countries 13 tons. The Indonesian Trade Mission in China which hopes to do business with that country in tin, rubber, petroleum, etc., passed through Hong Kong last week. Later reports of the attempted revolution in Bolivia at the beginning of last week show that risings took place not only in Cochabamba, where the heaviest fighting occurred, but in La Paz and Santa Cruz. Hundreds of people are said to have been arrested and will be brought to trial.

ASBESTOS.—The demand for all grades of asbestos continues at the level rate of recent months with the expected autumn pick-up. There is a particularly heavy demand for the shorts grades, with some ease-off in the paper grades and waste. The heavy demand is anticipated to continue through the autumn until the close of navigation reduces the volume of export shipments.

NIOBIUM.—The search for pyrochlore, a potential source of niobium and uranium, has been actively continued in British territory in Africa. A discovery in Nigeria was noted in *The Mining Journal* of June 20 last year and later in Uganda the Tororo Exploration Company was formed and granted a special prospecting licence to search for pyrochlore and other minerals. This week the Northern Rhodesia Development Secretary explained in the Legislative Council proposals for the exploitation of discoveries made in that colony. Samples of deposits were taken and are presumably finding their way to Harwell.

TUNGSTEN.—We are still without information of any business being done in tungsten ores by dealers in this country. In the United States prices were heavily cut towards the end of last week to $28-29 per s.ton unit, duty extra. The Ministry of Materials reduced its selling price at the beginning of the week by £1 per unit, making the price of wolframite 225s. and of scheelite 210s. delivered works. We understand that the only tungsten ores now being exported from Portugal are those embraced by long-term contracts.

QUICKSILVER.—The New York price is slightly firmer at $185-$188 nom. per flask. Italian production of quicksilver in the first three quarters of the year is reported at 869 tonnes compared with 703 tonnes in the same period of last year.

GOLD.—The premium on gold sold on the free markets has been dropping for some time and on Wednesday ran off

altogether. This appears to be due to various causes, most influential, perhaps, being the proportion of their output sold by gold producers on the free markets. Russia, too, has been selling gold, recently these sales of gold being estimated at about £5,000,000. Following on sales of silver and platinum earlier in the year, this move is generally explained as being due to the need to acquire sterling to pay for an extended buying campaign of foreign goods requisite for the expansion of Russian economy.

Increasing stabilization of paper currencies by diminishing the attractiveness of hoarding has also been an influence, to which the apparent determination of the United States Administration not to devalue the dollar has contributed.

Iron and Steel

The attainment of a new record in steel production last month convincingly testifies to the healthy state of the industry, and confidence in its continuance is expressed in the overwhelming success of the initial step towards denationalization—the offer of the 14,000,000 shares of the United Steel companies for which there were 40,000,000 applications.

There is abundant evidence of the intensification of competition in the world markets. The European cartel, for example, has reduced export prices by amounts ranging up to 11 per cent and British bar re-rollers are confronted with the almost total loss of their overseas trade. But British iron and steel producers would not be expanding production if the call for their manufactures was declining. All the plants have heavy commitments, and in some cases have closed their order books to the end of the year. Supplies of pig iron and scrap cannot keep pace with steel makers' requirements and reserve stocks of both these commodities are being depleted. Fortunately, there was a substantial build up of reserve stocks during the summer months, but it is evident that there will have to be a further increase in pig iron production and also a higher intake of imported scrap.

The light castings trade is in the early stages of a progressive revival. After some months of short-time working the Scottish and North of England foundries are now fairly regularly employed and makers of domestic appliances are apparently much busier. Ironmasters are still able to meet the increased calls for high phosphoric iron but all other grades—basic, haematite, low and medium phosphorous—are in eager demand.

Sheet makers are extremely busy and will find it difficult to execute all their orders for deliveries before the end of December. Fortunately they are well supplied with sheet bars and slabs mostly of British origin. Small billets are also more freely available than they were a month or two ago. Plate mills have increased their production without overtaking the urgent requirements of the shipyards, engineers and boilermakers whilst railway and colliery requirements call for substantial deliveries of rails, crossings, arches and props.

The London Metal Market

(From Our Metal Exchange Correspondent)

The present situation in respect of the U.S./Chilean copper talks is still unclear, but there seem to be grounds for believing that a complete breakdown has only occurred in respect of the so-called stockpile tonnage, leaving the question of the current production and associated matters still under consideration by both parties. The market in London has been very firm, due to continued buying of forward copper on the market by European interests and to the covering-in of short sales made soon after the market opened. It is probable that the size of the backwardation will decrease in coming weeks, although most people expect it to remain for a long time at a level of about £10 per ton. Consumption of copper is good throughout the world, and there appears to be a certain amount of buying being held up which should go some way towards cushioning any sudden offerings of Chilean metal, provided these are not of enormous size.

Demand for lead has eased off both in this country and on the Continent, and with the exception of prompt metal there seems to be enough coming forward to satisfy normal consumer demands.

The zinc market has fluctuated within narrow limits but the undertone is still good, and it was interesting to report a substantial tonnage of November zinc changing hands on Monday without any appreciable effect on either the price level or the backwardation. It is believed that the market as a whole is short, and that fairly substantial tonnages of physical metal can be absorbed before the backwardation is affected. The supply position is still unbalanced with an apparent shortage on this side of the Atlantic and an obvious surplus on the other, but the former is not such that the price level makes it attractive for the shipment from the U.S. to Europe. It may be, however, that at least one American producer will eventually accept lower prices in Europe rather than indulge in selling freely in America with a consequent reduction in the E. and M.J. quotation.

The tin market has been helped by better demand in America for forward delivery tin from Singapore, and also by enquiries for English tin for prompt shipment. On Thursday the Eastern price was equivalent to £646 per ton c.i.f. Europe.

Closing prices and turnovers for the week are given in the following table.

	November 12		November 19	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£625	£630	£635	£640
Three months	£612½	£617½	£620	£622
Settlement	£627½		£637½	
Week's turnover	305 tons		405 tons	
Lead				
Current month	£94	£94¼	£94	£94¼
Three months	£90	£90¼	£90½	£90¾
Week's turnover	2,600 tons		1,725 tons	
Zinc				
Current month	£76¼	£76½	£75¾	£76
Three months	£74¼	£74½	£74½	£75
Week's turnover	4,525 tons		5,700 tons	
Copper				
Cash	£235½	£236	£236½	£237
Three months	£222½	£223	£225¾	£226
Settlement	£236		£237	
Week's turnover	3,925 tons		2,750 tons	

NOVEMBER 19 PRICES

COPPER, TIN, LEAD AND ZINC

(See our London Metal Exchange report for Thursday's prices)

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. £210 per ton
Crude (70%) .. .. .. £200 per ton
Ore (60% basis) .. .. .. 22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £483 per ton

OTHER METALS

Aluminium, 99·5% £150 per ton
Bismuth
(min. 4 cwt. lots) 16s. lb.
Cadmium (Empire), 13s. 10d./14s. 4d. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) £225/£262
Osmiridium, £40 oz. nom.
Osmium, £65/£70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £27/£33 5s.
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £61 15s. ex-warehouse
Selenium, 30s. 6d. nom. per lb.
Silver 74d. f.oz. spot and f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 60% 8s. 3d. lb. c.i.f.
50% 7s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £14 8s. 0d. per ton c.i.f.
,, ,, (concentrates) £14 8s. 0d. per ton c.i.f.
,, ,, Refractory £14 0s. 0d. per ton c.i.f.
Baluchistan Metallurgical .. £15 19s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26 - £27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. 102s. 4d. - 103s. per unit c.i.f.
Wolfram (65%) .. .. .. World buying nom.
,, ,, ... 225s. nom. U.K. Selling
Scheelite .. .. World buying nom.
,, ... 210s. nom. U.K. Selling
Tungsten Metal Powder (98% Min. W.) .. .. 19s. 6d. nom. per lb. (home)
Ferro-tungsten .. .. .. 16s. 6d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £35 13s. 9d. d/d per ton
Ferro-manganese, home .. .. £52 10s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46% - 48%) .. .. .. 7s. 11d. - 8s. 4d. per unit
Brass Wire .. .. 2s. 5¾d. per lb. basis
Brass Tubes, solid drawn .. 1s. 10d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The stock markets paused for breath during the week. Gilt-edged remained steady. The talk of a token strike by the engineering unions and the less satisfactory revenue undoubtedly had their effect.

Kaffirs staged a sharp recovery after their recent weakness. Among finance houses, Consolidated Goldfields shares were steady following the report but Johnnies turned easier on the news that the company is raising fresh capital. Shareholders are being offered one new share at 40s. for every three held. It is thought that the money will be employed in financing the Freddies mines in the Orange Free State. Rand Selection rose following news of the maintained dividend. West Witwatersrand were also in demand due to encouraging development results and reports from various mines in which they are interested.

Blyvoors showed little change despite the news that their uranium plant is likely to be in full operation by the end of the year. Doornfontein were again bought following the satisfactory report and the commencement of milling on the property. Luipaards Vlei turned easier. The construction of the uranium plant is going ahead but development on the Bird reef, from which most of the ore will be extracted, has shown it to be faulted. Government Areas were unchanged on the reported fire in the mine. It is believed that this may not affect the November returns.

Most of the renewed interest in Kaffirs was directed to developing mines in the Orange Free State. This group went ahead well. Freddies mines were supported and there was talk of "shop" buying. Harmony again proved popular with investors and current market talk suggests that this might be one of the most promising properties in the field. St. Helena were held in check by the news of labour trouble on the mine although the strikers subsequently returned to work. This follows a recent fatal accident and there has been talk of stringent precautions and the possibility that the property may be named a "fiery mine."

In the West African section, there was little of note but Gold Coast Selection Trust hardened on the maintained dividend of 15 per cent.

St. John d'El Rey improved on the news that a strike on the property had ended. Currency difficulties remain.

C.A.S.T.S. announced a cut of 5 per cent in the dividend and the company are paying a total of 75 per cent for the year against 80 per cent last year. The group profits were higher which was considered an encouraging factor. De Beers rose on some investment demand. Platinums were disappointing despite the good returns from Rustenburg. Profits from this mine came out at £2,900,000 against £2,300,000 last year. All the metal was sold without difficulty and a further expansion of production is expected in the future. On the longer term view, there is a little uncertainty over how long world markets will continue to absorb the supply and in this connection it is interesting to remember that International Nickel is also a producer of platinum.

Coppers were better. Roans improved on the termination of the strike. Esperanza also went ahead on the favourable mention in the Kwahu report. Rhokanas rose on reports of active uranium exploration. Plans are now in hand for the development of Kilembe copper and cobalt mines in Uganda.

Tin shares were little changed despite the United Nations conference now sitting in Geneva. Pahang fell on the cut in the dividend. Beralts were down again on the reduced price of wolfram. Nigerian columbite mines resisted the general trend.

Lead/zincs were weak but little selling was reported at the lower levels. Mount Isa dividend has been cut from 20 per cent to 15 per cent. It is reported that there has been pressure in the United States for a higher import tariff on lead to protect the local industry. Consolidated Murchison were flat. The company reported a loss for the September quarter, and this has raised doubts concerning the forthcoming dividend.

FINANCE	Price Nov. 18	+ or — on week
African & European	2/6	+1/6
Anglo American Corpn.	5/-	—3/-
Anglo-French	17/6	.....
Anglo Transvaal Consol.	19/4½	—7½d
Central Mining (£1 shrs.)	26/9	+9d
Consolidated Goldfields	45/6	+6d
Consol. Mines Selection	23/9	.....
East Rand Consols	2/10½	+4½d
General Mining	3½	.....
H.E. Prop	36/3xd	.....
Henderson's Transvaal	7/6	+3d
Johnnies	46/-	—3/9
Rand Mines	3½	.....
Rand Selection	30/7½	+1/10½
Strathmore Consol.	28/9	—1/3
Union Corp. (2/6 units)	24/9	+3d
Vereeniging Estates	3½	.....
Writs	30/7½	+7½d
West Wits	40/7½	+1/3
RAND GOLD		
Blyvoors	38/3	+3d
Brakpan	9/9	+6d
City Deep	15/3	.....
Consol. Main Reef	17/6	+7½d
Crown	32/6	+7½d
Daggas	3½	+1/16
Doornfontein	24/-	+2/9
Durban Deep	34/4½	.....
E. Daggas	13/6	+9d
E. Geduld .. (4/- units)	29/4½	.....
E. Rand Props	2 7/16	+1/16
Geduld	3 1/16	.....
Govt. Areas	11/6	.....
Grootvlei	21/3	.....
Libanon	9/3	+10½d
Luipaards Vlei	20/9	—3d
Marievale	17/6	+1/-
Modderfontein East	15/-	—1/3
New Kleinfontein	16/10½	.....
New Pioneer	15/6	+6d
Randfontein	45/3	+1/6
Robinson Deep	10/9	+3d
Rose Deep	13/1½	+7½d
Simmer & Jack	4/6	+3d
S.A. Lands	18/9	.....
Springs	4/3	+6d
Stilfontein	24/6	.....
Sub Nigel	38/1½	—7½d
Van Dyk	5/3	—6d
Venterspost	14/9	+2/3
Vlakfontein	12/7½	+7½d
Vogelstruisbult	31/-	+1/3
West Driefontein	6½	.....
W. Rand Consolidated	2½	.....
Western Reefs	2 1/16	.....
O.F.S.		
Freddies	8/9	+1/-
Freddies N.	8/6	+9d
Freddies S.	8/-	+1/1½
F. S. Geduld	2½	+1/2
Geoffries	12/9	+1½
Harmony	23/9	+9d
Loraine	6/7½	+4½d
Lydenburg Estates	11/6	+3d
Merriespruit	7/4½	+1½d
Middle Wits	12/7½	+4½d
Ofsits	33/-	+1/6
President Brand	27/10½	+7½d
President Steyn	19/7½	+7½d
St. Helena	13/6	+7½d
Virginia Ord.	10/9	+6d
Welkom	16/4½	+1/9
Western Holdings	3 1/2	+1/2
WEST AFRICAN GOLD		
Amalgamated Banket	1/7½	—½d
Ariston	5/9	—1½d
Ashanti	20/1½	—1½d
Bibiani	5/-	.....
Bremang	2/1½	.....
G.C. Main Reef	3/4½	.....
G.C. Selection Trust	6/6	+4½d
Konongo	2/1½	.....
Lyndhurst Deep	10½d	.....
Marlu	1/4½	+1½d
Taquah & Abosso	2/6	—3d
AUSTRALIAN GOLD		
Boulder Perseverance	2/6	.....
Gold Mines of Kalgoorlie	13/-	.....
Great Boulder Prop.	9/-	.....
Lake View and Star	14/3xd	+3d
Mount Morgan	17/3	—3d
North Kalgurli	6/6	+3d
Sons of Gwalia	5/6	—3d
South Kalgurli	6/9	.....
Western Mining	10/10½	+1½d
MISCELLANEOUS GOLD		
Cam and Motor	9/6	+1½d
Champion Reef	4/7½	.....
Falcon Mines	7/1½	.....
Globe & Phoenix	21/9	.....
G.F. Rhodesian	4/9	—3d
London & Rhodesian	5/-	.....
Motapa	1/7½	—1½d
Mysore	4/-	.....
Nundydroog	5/9	.....
Ooregum	3/10½	—1½d
Oroville	11/6	.....
MISCELLANEOUS GOLD (contd.)		
St. John d'El Rey	22/9	+3d
Zams	30/9	.....
DIAMONDS & PLATINUM		
Anglo American Inv.	4	.....
Casts	20/9	—6d
Cons. Diam. of S.W.A.	4½	.....
De Beers Defd. Bearer	65/6	+2/-
De Beers Pfd. Bearer	16½	+¼
Pots Platinum	8/-	.....
Watervaal	13/6	.....
COPPER		
Chartered	53/4½	+2/1½
Esperanza	7/-	+9d
Indian Copper	3/10½	.....
Messina	3½xd	—1/8
Nchanga	6½	+1/8
Rhod. Anglo-American	48/3xd	+1/-
Rhod. Katanga	14/10½	—1½d
Rhodesian Selection	14/7½	+3d
Rhokana	18½xd	+¼
Rio Tinto	20	.....
Roan Antelope	14/1½	+6d
Selection Trust	31/10½	—4½d
Tanks	58/3	—3d
Tharsis Sulphur Br.	42/6	.....
TIN (Eastern)		
Ayer Hitam	22/6	.....
Bangrin	8/-	.....
Gopeng	7/6	.....
Hongkong	5/6	.....
Ipoh	13/9	.....
Kamunting	7/10½	.....
Kepong Dredging	3/10½	.....
Kinta Tin Mines	10/-	.....
Malayan Dredging	25/6	.....
Pahang	12/3	—9d
Pengkalen	8/-	.....
Petaling	7/6	+3d
Rambutan	10/6	.....
Siamese Tin	7/6	.....
Southern Kinta	12/6	—6d
S. Malayan	23/9	—3d
S. Tronoh	7/6	—1½d
Sungei Kinta	10/-	.....
Tekka Taiping	4/-	.....
Tronoh	21/-	—6d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	11/9	+9d
Beralt Tin	18/3	—1½
Bisichi	4/1½	+1½d
British Tin Inv.	12/1½	+1½d
Ex-Lands Nigeria	3/6	+1½d
TIN (Nigerian and Miscellaneous) contd.		
Geevor Tin	9/9	.....
Gold & Base Metal	2/9xr	—1½d
Jantar Nigeria	8/9	+3d
Jos Tin Area	11/-	.....
Kaduna Prospectors	2/3	.....
Kaduna Syndicate	2/3	.....
London Tin	5/1½	.....
United Tin	3/1½	+1½d
SILVER, LEAD, ZINC		
Broken Hill South	42/6	.....
Burma Mines	1/3	—1½d
Consol. Zinc	25/3	+1/-
Lake George	7/-	—1/9
Mount Isa	31/3	—6d
New Broken Hill	22/9	—6d
North Broken Hill	2½	—½
Rhodesian Broken Hill	10/9	+3d
San Francisco Mines	17/6	.....
Uruwira	2/6	.....
MISCELLANEOUS		
BASE METALS & COAL		
Amal. Collieries of S.A.	43/-	.....
Associated Manganese	54/6	+1/-
Cape Asbestos	22/7½	—3d
C.P. Manganese	52/6	—7½d
Consol. Murchison	18/1½	—10½d
Mashaba	3d	.....
Natal Navigation	3½	.....
Rhod. Monteleo	1/3	.....
Turner & Newall	64/9	.....
Wankie	12/3	+3d
Witbank Colliery	3 3/32	.....
CANADIAN MINES		
Dome	$29½	+1
Hollinger	$23½	—½
Hudson Bay Mining	$75	—1
International Nickel	$69½	—1
Mining Corpn. of Canada	£4 1/8	+1/16
Noranda	$123	+3½
Quemont	£6½	.....
Yukon	3/10½	+1½d
OIL		
Anglo-Iranian	8 7/32xd	+¼
Apex	46/3	—6d
Attock	35/-	—7½d
Burmah	56/10½	+4½d
Canadian Eagle	28/6	—1½d
Mexican Eagle	22/6	+3d
Shell (bearer)	4½	+3/32
Trinidad Leasehold	34/-	+1/3
T.P.D.	23/9	.....
Ultramar	30/3	+4½d

COMPANY NEWS AND VIEWS

G. C. Selection Trust Group September Quarterly Results

The five West African gold producers in the Gold Coast Selection Trust Group published their results for the September quarter at the beginning of this week.

Company	Dec. Qtr. £ (1952)	Mar. Qtr. £ (1953)	June Qtr. £ (1953)	Sept. Qtr. £ (1953)
Amalgamated Banket	92,475	74,168	74,200	73,746
Ariston Gold Mines	170,443	150,087	113,583	105,740
Bremang Gold	11,202*	44,331	39,584	23,531
Gold Coast Main Reef	44,735	41,247	41,471	45,247
Marlu Gold	35,658	50,035	37,454	53,454

*Total excludes £1,963 recovered from a clean-up.

As the table above shows only Gold Coast Main Reef and Marlu were able to announce higher profit figures than in the preceding quarter. Ariston's output was affected by the underground fire experienced in July but profits recovered sharply in October as pointed out elsewhere in these columns. Bremang's profit contraction was due to its No. 3 dredge being shut down for two periods during the quarter and to difficult dredging ground.

Amalgamated Banket announced that the new ropeway linking Fanti to the Central Mill was completed satisfactorily and that 10,324 tons of ore were transported during the quarter.

West Africans in October

The monthly mine returns from 10 of the West African gold producers for October published below, together with their accumulative totals, provide in the case of seven companies the point of departure for the current year's results. Four of the companies in this category show higher profits than in the corresponding period a year ago, but three of them, Ashanti, Bibiani, and Amalgamated Banket, show declines ranging from £4,000-£5,000 in the case of the first two companies mentioned to the sizeable contraction in profits of about £12,000 in the case of Amalgamated Banket, whose results were, however, affected by the temporary low grade ore from the Pepe Section.

Ariston's results were perhaps the most outstanding, the working profit advancing to £49,651 compared with £38,727 in September and £32,209 two month ago, when profits were adversely affected by an underground fire. These figures reflect the record tonnage crushed of 30,500 from which 10,074 oz. were recovered yielding a gross revenue of £130,962. Marlu's profit figure was also well above average and the company has got off to a flying start as has Konongo who is still managing to produce nearly as many ounces as tons milled. Lyndhurst Deep appears to be milling a higher grade of ore, while Taquah and Abosso continue to return reasonable monthly profit figures, its cumulative profit figure to date showing an advance, in fact, of approximately £126,000 over the corresponding period last year.

Company	October, 1953 Tons (000)	Yield (oz.)	Profit (£000)	Months since year end	Current Financial Year Total to date Tons (000)	Yield (oz.)	Profit (£000)	Last Financial Year Total to date Tons (000)	Yield (oz.)	Profit (£000)
A.B.A.‡	67	10,099	14.2	1	67	10,099	14.2	55	9,282	26.4
Ariston Gold	30	10,074	49.6	1	30	10,074	49.6	30	9,772	46.7
Ashanti	24	15,237	69.3	1	24	15,237	69.3	21	14,500	74.7
Bibiani (1927)	30	6,315	7.9	1	30	6315	7.9	31	6,035	11.4
Bremang† *	523	2,149	6.1	10	5625	25,938	109	6,012	28,891	156
G.C.M.R.§	8	3,583	10.0	4	35	14,730	48	33	12,330	34.0
Konongo	2	2,523	12.5	1	2	2,523	12.5	2	2,178	10.1
Lyndhurst Deep	0.9	1,172	5.7	1	0.9	1,172	5.7	1.0	1,081	5.0
Marlu Gold	39	4,388	21.3	1	39	4,388	21.3	40	4,093	12.7
Taquah and Abosso	25	6,052	7.0	7	174	32,157	75.1	150	34,819	L51.2

As the basis of calculating monthly profits varies from company to company, a direct comparison one with another is not possible. The basis for any one company has, however, remained consistent unless otherwise indicated.
† Ore treated dredged in cu. yd. L indicates a loss.
§ 2 milling days lost due to breakdown of crusher.
‡ Profit affected by temporary low grade ore from the Pepe section.
* No. 1 dredge adversely affected by fallen timber and stopped on October 26 with damaged screen.

Rand Selections Pay Same On Larger Capital

Rand Selection Corporation has declared a dividend of 2s. per 5s. share, or 40 per cent, in respect of the year ended September 30 last. This is the same as was paid a year ago but the current payment is made on a capital increased by the issue of 400,000 5s. shares subscribed by Anglo American Corporation of South Africa last year which raised the issued capital to £1,718,993. The dividend—No. 76—is payable to shareholders registered on November 27 and to holders of coupon No. 78. Warrants will be posted on or about January 4 next.

Subject to audit, the profit for the year, after providing for taxation, was £746,000 (£723,206). After writing off expenses in connection with the issues of shares and 5½ per cent Unsecured Registered Notes against the share premium of £700,000 received towards the end of 1952, the sum of £650,000 (nil) was placed to general reserve, which now stands at £6,250,000.

Cam and Motor Forges Ahead

While most gold mining companies, no matter where situated, are exerting every effort to prevent too big a drop in their dividend distribution, Cam and Motor Gold Mining, the progressive Southern Rhodesia gold producer, is increasing the scale of its operations and the size of its distribution.

Year to June 30	Milled (tons)	Grade (dwt.)	Yield (oz.)	Per ton milled Revenue s. d.	Cost s. d.	Working Profit £
1953	284,500	5.3	75,872	69 4	35 8	479,262
1952	269,500	4.8	65,732	61 8	33 8	377,027
1951	244,500	4.5	55,136	55 6	32 4	283,578

As the above table shows Cam and Motor during the year to June 30 last showed an all round improvement which rebounded very favourably indeed on its earning position, enabling the company to raise its total distribution to 40 per cent per 2s. 6d. share on the £468,750 issued capital.

Year to June 30	Gross Revenue £	Expenses £	Taxation £	Net Profit £	Dividend %	Carry Forward £
1953	484,241	53,198	97,000	334,043	40	90,648
1952	381,909	53,117	148,157	180,635	36	59,340
1951	289,444	37,530	102,000	149,914	36	47,455

The improved position reflected in the current year's results has been more than maintained during the current year, and monthly production returns for the first four months of the current year show that 96,000 tons have been put through the mill yielding 29,509 oz. for a working profit of approximately £180,000, which compares with a mill throughput of 95,500 tons yielding 24,440 oz. for a working profit of approximately £152,000 in the corresponding period of the year under review.

Mr. Bailey Southwell is chairman. Meeting, Salisbury, Southern Rhodesia, December 8.

Consolidated Murchison Suffers Set-back

A loss of £46,792 in the September quarter was announced by Consolidated Murchison, the Transvaal antimony and gold producer, compared with a profit, before tax, of £134,140 in the June quarter. This has led to a readjustment of tax liabilities and the position at the end of the first nine months of the current year is that the company's net earnings total £171,256 after deducting the current quarter's loss of £46,792 and the readjusted total estimated tax payable of £42,000, of which £3,230 represents loan levy. Capital expenditure during the quarter amounted to £2,856 compared with £24,965 in the June quarter and £31 in the March quarter. The sum of £133 was received from premium gold sales, which amount is excluded from the current quarter's loss but included in the net profit figure for the first nine months.

The quarterly announcement states that during the three months period there was no demand for antimony ore but that additions were made to the stock of cobbed ore and concentrates so that the company remains in a position to take immediate advantage of any demand for antimony as and when this arises. Full details of the September quarter's results are given on page 603 of this issue.

Consolidated Zinc and New Broken Hill Maintain Interim Payments

Despite the disappointment caused by the Lake George profit figures, noted in these columns last week, which led to the passing of the dividend, subsequent news from Australia puts a much better face on the situation and both Consolidated Zinc and New Broken Hill have announced unchanged interim dividends in respect of the year ending December 31, 1953. Consolidated Zinc is paying 1s. per share and New Broken Hill 9d. per share. Mount Isa, the Queensland silver and base metal producer, also maintained its final dividend so that it would appear either that the profit margins of these producers are highly elastic and that a relatively small increase in the price of lead and zinc results in a relatively large

increase in profits, or else Lake George has had to contend with some other and as yet unknown commitment. At all events it will be interesting to hear what the chairman has to say at the Lake George meeting convened for January 4 next.

Mount Isa Cuts Dividend by 5 Per Cent to 15 Per Cent

Mount Isa Mines in a preliminary profit statement announced an unchanged final dividend of 10 per cent per £A1 share, making 15 per cent for the year to June 30 last compared with a total distribution of 20 per cent for the preceding year.

Year to June 30	*Working Profit*	*Taxation*	*Depreciation*	*Net Profit*	*Dividend*	*Capital Expend.**
	£A	£A	£A	£A	%	£A
1953	2,768,663	300,000	800,000	1,668,663	15	600,000
1952	5,115,040	2,135,282	800,000	2,179,758	20	1,000,000

*Appropriated out of profit for the year for capital expenditure and mine development.

The much reduced tax attracted enabled the net profit figure to retain a good deal of substance and shareholders suffered only a small cut in their dividend income compared to the tax man whose off-take fell by no less than £A1,835,282.

When the company announced its interim payment of 5 per cent (10 per cent) per £A1 share, it was stated that the reduction was the result of the drastic fall in lead and zinc prices during the latter half of the company's financial year and the need to provide a substantial portion of the profits to meet capital commitments.

Meeting, Brisbane, December 7.

Unsettled Outlook for Temoh Tin

As the table below clearly shows, results achieved by Temoh Tin Dredging in the year to June 30 last were satisfactory. At any rate they were sufficiently good to enable the company to raise its dividend distribution by 2½ per cent and to leave the forward balance stronger.

Year to June 30	*Gross Revenue*	*Working Profit*	*Taxation*	*Net Profit*	*Dividend*	*Carry Forward*
	£	£	£	£	%	£
1953	31,480	25,294	8,524	16,770	12½	11,475
1952	28,499	22,264	15,638	6,626	10	6,542
1951	53,891	47,405	28,382	19,023	12½	7,266

Unfortunately, these results can in no way be taken as a guide to the current year's operations. Principally because one of the two main sections worked by gravel pumps on a tribute basis was exhausted during the year thereby involving the removal of the plant to a new area. More than that, gravel pump operations on a tribute basis to be an economic proposition to the company must be completely dependent on the price of tin attaining a reasonable level before the tributor can commence operations. As no figures are given as to the nature or grade of ground the tributors are working it is not possible to even guess what would be a reasonable price. But if the production figures released for the first three months of current year can be taken as a guide it would appear that the tin price had not reached an economic level and what production there was, 17½ tons against 74 tons in the corresponding period during the year under review, probably came from the northern section of the company's property which supported tribute operations throughout the year to June 30 last.

Mr. R. Ellerton Binns is chairman. Meeting, London, December 8.

Ipoh Tin: A Forecast Confirmed

At last year's annual meeting of Ipoh Tin Dredging, Mr. R. Ellerton Binns, chairman, outlined the difficulties with which the company had to contend and warned that a considerable fall in profits was to be expected from operations during the year to March 31 last. The report and accounts now published confirm Mr. Binn's forecast. That the results were, perhaps, even more disappointing than he could have estimated at that time was doubtless due to the serious mechanical breakdown of the dredge in February last which put it out of action for nearly three months. Thus the dredging results summarized in the table immediately below represent only ten months' working.

Year to Mar. 31	*Dredged Acres*	*Dredged Cu. Yd.*	*Per Cubic Yard Yield*	*Cost*	*Dredge Output*	*Tin Proceeds**
		(000)	(*lb.*)	(*pence*)	(*tons*)	£
1953	15	979	0.45	25.5	200	96,161
1952	33	1,751	0.33	14.4	256	128,701
1951	30	1,695	0.47	11.5	358	171,496

*Excluding tribute received of £15,006 (1952—£28,157).

The financial results were similarly affected. The net earnings were sufficient to pay 2s. per 16s. share on the £160,000 issued capital, albeit with the assistance of £2,035 drawn from the carry forward.

Year to Mar. 31	*Gross Revenue*	*Expenses*	*Taxation*	*Net Profit*	*Dividend**	*Carry Forward*
	£	£	£	£	*s. d.*	£
1953	129,370	120,533	Nil	8,837	2 0	37,468
1952	173,542	121,574	39,025	12,943	3 0	39,503
1951	238,905	102,033	85,487	51,385	2 4½	42,193

*Issued capital is £160,000 in shares of 16s. each.

The outlook for the current year is fair. Production during the first six months totalled 204½ tons compared with 191 tons in the corresponding period of the year under review, but with the lower prices prevailing for tin and the relatively high cost of stores and materials, the chairman does not expect the current year's results to show much, if any, improvement on those achieved during the year under review.

Meeting, London, December 8.

September Tin Returns

Of the nine tin producers listed in the table below whose financial year ends in September, only Hongkong Tin was able to announce improved production figures for the year compared with the preceding twelve months. However, there are several companies whose cumulative totals to-date augur well for the final year-end total. Siamese Tin Syndicate and its daughter company, Bangrin, are both well in advance of their previous year's corresponding results as are Renong, Rawang Concessions, Ampat and Sungei Besi. In the Nigerian group of tin and columbite producers, Amalgamated Tin Mines of Nigeria has gone ahead with its columbite operations though tin output at the end of the first six months of its current financial year shows a perceptible contraction. The two Kadunas continue to make good progress, particularly Kaduna Syndicate, and their cumulate totals for the first nine months of the current year are well above the corresponding totals a year ago. The same can be said for Naraguta Karama, South Bukeru and South Crofty, the Cornish tin producer, while at the end of six months those companies showing to advantage over the corresponding results attained in the preceding year include Ribon, Tinfields of Nigeria and Geevor, the other important Cornish tin producer.

Output in the months ahead is likely to be considerably affected by the outcome of the International Tin Conference now sitting in Geneva. Meanwhile the following are the outputs for September in tons of tin concenerates:

Company	*Sept.*	*Months since year end*	*Financial Year to Date* This	Last	*Company*	*Sept.*	*Months since year end*	*Financial Year to Date* This	Last
EASTERN					**EASTERN**				
Ampat	107	9	931	741	Tambah	12½	9	74½	102
§†Ayer Hitam	130½	3	130½	169½	Tanjong	80½	9	623½	778
Bangrin	59½	9	542½	425	†Tekka	39½	6	69½	55½
Batu S.	16½	12	195	284	†Tekka T.	63½	11	229½	234
Berjuntai	52½	5	241½	384	†Temoh	17½	3	17½	74
†Chenderiang	22½	6	50	81	Tongkah	30½	3	96½	229
†Gopeng Cons.	125½	12	585½	856½	**NIGERIA**				
†Hongk'ng Tin	62½	12	312½	238½	Amal. Tin	305	6	1874	2098
†Idris Hyd.	45	9	181	243	•Amal. Tin	58	6	323½	222
†Ipoh Tin (*a*)	81½	6	204½	191	Bisichi	53	9	370	420
Kampong	30½	6	144½	155	•Bisichi	25	9	134	119
Kamunting	113½	6	647½	1114	Ex-Lands	48	9	440	425
†Kent (F.M.S.)	111½	9	324½	332	Filani	6	9	50½	62
†Kepong	70½	3	70½	81	Gold & Base	135	9	415	430
†Kilinghall	37½	12	286	620	•Gold & Base	29	9	64½	—
Kinta K.	33	6	143½	70	Jantar	16	12	212	256
Kinta T.	37½	9	250½	207½	•Jantar	12	12	210	214
Klang River	41½	6	240	182	Jos Tin	14	2	26½	29½
Kuala K.	114	6	941½	949	Kaduna P.	10½	9	86½	60
Kuchai	28½	12	451	814	Kaduna S.	30	9	264	178
Larut	61½	9	409	577	Keffi	6½	6	13½	134
Lower Perak	65½	5	342	385	•Keffi Tin	24	6	41½	—
Malaysiam	13½	6	46½	33	Naraguta Ex.	7½	9	54	63
Pahang	220	2	440	440	Naraguta K.	22	9	110½	97
†Pengkalen	78½	12	320½	531	Naraguta T.	21½	9	174½	222
†Petaling (*b*)	487½	11	1878½	1949	•Naraguta T.	7½	9	40	39
†Puket Tin	99½	9	219½	360	Ribon	17	6	63	45
Rahman	38½	3	127½	114	Rukuba	3	6	13½	9½
†Rambutan	21½	3	21½	22½	S. Bukeru	8¼	9	55½	43
Rantau	51½	3	148½	203	Tinfields of Nig.	2	6	15½	9½
Rawang Conc.	68½	6	375	281	U. Tin	13	3	27	36
Renong	103½	3	228½	68	•U. Tin	¾	3	1¼	—
†Selayang Tin.	69	12	167½	352	**MISC.**				
S. Kinta	449	6	2101½	2384	Beralt Tin	5	6	47	70
†Siamese Tin	505	9	1424½	1279½	‡Beralt Tin	201	6	1116	1120
†S. Tronoh	32½	9	121	454	Geevor	60	6	328	280
†Sungei Besi	264½	6	536	470	S. Crofty Tin	46½	9	401¼	340
†S. Kinta	74½	9	188½	185	‡S. Crofty Tin	—	9	1	1½

• Columbite. † Quarterlies. ‡ Wolfram. § Figures for July only. Dredge shut down for overhaul from July 29 - Oct. 11. *a* No. 3 dredge only. *b* No. 6 dredge shut down for 9 days. No. 3 dredge shut down for 4 months.

Company Shorts

Proposed United Kingdom Mining Association.—A number of companies are making strenuous efforts to revive the non-ferrous metal mining industry in the United Kingdom.

Although they have met with a measure of success there are still many difficulties standing in the way of the revival of the industry, and it is felt that the time has now arrived when an Association, representing all those engaged in the non-ferrous metal mining industry, should be formed to serve as a channel through which Government or other authorities could confer with the industry.

At a recent meeting of some of those who are interested it was decided to inaugurate this Association, and a formation committee was appointed, under the chairmanship of Mr. Sydney E. Taylor, with headquarters at 2 White Lion Court, Cornhill, London, E.C.2.

Rustenburg Platinum's Expanded Profits. — Metal sales of Rustenburg Platinum Mines during the year to August 31 last advanced from £2,329,795 to £2,920,467 which comprised the bulk of the company's total income for the year of £2,947,568 against £2,352,762. Royalty provisions were less, £27,492 against £31,937, but tax charges were substantially higher, £962,720 against £677,139, and after providing for all other charges the net profit for the year was £1,946,403 compared with £1,631,543.

Funds allocated for capital expenditure totalled £96,438 (nil), and the sum of £464,059 (£456,083) was transferred to stock realization reserve, which represented the increase in the value of the unrealized stocks at the close of the year at cost of production, and after distributing £1,212,000 (£1,090,800) the balance of £458,406 was transferred to general reserve, on account of the values of stores and material, other than capital stores, on hand at August 31. In the preceding year the balance carried forward was £284,500.

The directors report that the planned additions to the reduction plants are now complete and that the Union Section operated throughout the year at the full capacity of the expanded plant, and Rustenburg, where the additions to the plant were only completed towards the year end, was now also operating to the full designed capacity. The matte produced was shipped regularly to England for treatment and realization of the metals, as was also the total output of metallic from both sections.

The directors state in this connection that it is hoped that the matte treatment plant in the vicinity of the mine at the Rustenburg Section will be ready for operation around the middle of 1954, but that the cost of completing this plant would exceed the original estimates and thus further calls would be made on the company to meet this expenditure during the current year.

The issued capital of Rustenburg Platinum is £808,000 of which Potgietersrust Platinums hold 43.3 per cent, Waterval (Rustenburg) Platinum holds 39.2 per cent, and Union Platinum holds 17.5 per cent.

Mr. K. Richardson is chairman. Meeting, Johannesburg, December 9.

"Johnnies" Offer One for Three at 30s.—Johannesburg Consolidated Investment have announced the offer to shareholders of 1,316,666 new shares of £(SA)1, at 40s. per share. The shares are to be offered to shareholders registered at the close of business on December 2, and to holders of share warrants to bearers presenting coupon No. 60 on or before December 28. The new issue will be on the basis of 1 new share for every 3 shares held. Treasury consent has been obtained and arrangements are being made for the underwriting of the issue by Messrs. N. M. Rothschild and Sons.

"Inco" Earns Less in First Nine Months.—The report of the International Nickel Company of Canada, and subsidiaries, for the nine months ended September 30, 1953, showed net earnings —in terms of U.S. currency—of $41,252,680, after all charges, depreciation, depletion, taxes, etc., equivalent after preferred dividends, to $2.72 per share on the common stock. For the corresponding period in 1952 the net earnings were $45,683,360, or $3.03 per share of common. Net sales for the nine months were $254,950,475, comparable with $228,915,593 for the corresponding period of 1952.

For the three months ended September 30, 1953, net earnings were $12,047,085, equal to 79 c. per share on the common, compared with $12,145,133, or 80 c. per share, for the corresponding quarter in 1952. The comparable earnings for the first quarter of 1953 were $15,590,551, or $1.03 per share, and for the second quarter were $13,615,044, or 90 c. per share.

In a letter accompanying the report, Dr. Thompson reminded the shareholders that although International Nickel is best known as a producer of nickel, it is also a leading producer of platinium metals. "Many tons of ore must be treated to produce one oz. of by-product platinum metals," he said. "But because of the very large tonnages of ore we mine, the Company in recent years has produced annually about 300,000 oz. of platinum metals with a market value well over $15,000,000.

Aluminium Ltd.'s Position at End of 9 Months.—An increase of $10,000,000 in capital cost allowances in the first nine months of 1953 contributed to a decline of $1,800,000 in Aluminium Limited's net earnings for the period as compared with the corresponding period in 1952.

Profit carried to earned surplus for the nine months ending September 30 last, was $14,090,376 or $1.57 per share on the 9,002,668 shares outstanding at the end of the quarter, compared to $15,883,109 or $1.76 per share on the basis of the same number of shares for the corresponding period last year.

Aggregate capital cost allowances provided by Aluminium Limited's consolidated subsidiaries were $36,945,260 compared to $26,923,198 in the first nine months of 1952. Consolidated sales for the first three quarters this year showed an increase to $248,625,624 from $233,576,326 in the first three quarters of last year.

Pasic Claim Delays Trepca Payment.—Since the close of its financial year, September 30, 1953, Trepca Mines has received from the Foreign Compensation Commission on interim payment of £260,000 in respect of a provisionally determined claim of £5,200,000 against the Yugoslav Compensation Fund. The directors had hoped that the receipt of an interim payment would enable them to consider a cash distribution to stockholders by way of return of capital, but the continued existence of the Pasic claim may, in the opinion of the company's legal advisers, be an obstacle to obtaining the sanction of the High Court in London to a reduction of capital.

The company's financial results for the year to September 30 last were dealt with in these columns in last week's issue. Mr. A. Chester Beatty, Jnr., is chairman. Meeting, London, December 9.

Kern Oil Pays More.—Kern Oil in a preliminary profit statement has announced the payment of 15 per cent and a bonus of 7½ per cent in respect of the year ended May 31 last, which compares with 15 per cent and a bonus of 5 per cent per 4s. stock unit in the preceding year. This improvement can, perhaps, be attributed in part to an increase in production which at 316,665 tons compares with 306,254 tons in the preceding year. The better oil output figures have been maintained during the current year and the five months cumulative total shows oil production at 139,231 tons compared with 128,235 tons in the corresponding period in the year under review.

Year to May 31	*Working Profit*	*Taxation*	*Net Profit**	*Dividend Distribution*			*Carry Forward*
	£	£	£	%	(pence)	£	£
1953	750,114	336,898	277,956	22½	10.8	148,964	314,690
1952	800,699	344,998	266,796	20	9.6	126,394	288,698

* After providing £135,260 (1952 - £188,905) for depreciation.

The statement pointed out that the general reserve was increased to £700,000 by the transfer from foreign exchange reserve of £97,000 and by the transfer from the profit and loss account of £103,000.

Group net profit for the year to May 31 last was £316,584 £340,475) after providing £307,159 (£332,839) for depreciation and debiting £412,523 (£376,339) for taxation.

The report and accounts will be issued on November 25. The dividend and bonus are payable on January 1, 1954. Meeting, London, December 18.

Date Set for South Bukeru Extraordinary Meeting.—As foreshadowed in this column a fortnight ago, shareholders of South Bukeru Areas have now been convened to an extraordinary general meeting to be held at Winchester House, Old Broad Street, E.C.2, on December 8 next at 2.30 p.m. The purpose of the meeting is to consider resolutions removing from office all the existing directors of the company and replacing them with nominees of interests associated with the Parish group of companies. In a circular accompanying this notice, the board sets out in detail reasons why shareholders should resist the proposals. As yet the requisitionists have not seen fit to support their resolutions with any statement to shareholders of their motives, but it is understood that this will be forthcoming in due course. Until it is available, comment would be premature, although, now that the identity of the requisitionists has been revealed, shareholders will no doubt wish to refresh their memories on the circumstances of the recent unsuccessful attempt by the same interests to replace the board of Naraguta Tin Mines referred to in our earlier note of a fortnight ago on the present bid for control of South Bukeru.

Kamra and Pattani Tin Liquidations.—Kamra Tin Dredging and Pattani Tin have been placed in voluntary liquidation and Mr. Sydney Moore has been appointed liquidator in both cases.

WANKIE COLLIERY COMPANY

MR. T. COULTER'S STATEMENT

The Thirtieth Annual General Meeting of shareholders in Wankie Colliery Company Limited, will be held in Bulawayo on Monday, December 14.

The following are extracts from a statement by the Chairman, **Mr. T. Coulter,** dated October 23, 1953, circulated with the annual report and accounts for the year ended August 31, 1953:—

MANAGEMENT

Last April, the Anglo American Corporation of South Africa Limited Group acquired a substantial interest in the company and the Board of Directors was reconstituted. Anglo American Corporation of South Africa Limited were appointed Consulting Engineers to the company and the technical control of the colliery is now under the direction of the Coal Department of that Corporation.

ACCOUNTS

Profits earned during the year ended August 31, 1953, amounted to £465,016, compared with £245,198 earned in the previous year.

Provision for taxation absorbed £125,000, leaving a balance of £340,016, which amount, together with the balance of unappropriated profits at August 31, 1952, made available for appropriation a total amount of £560,098.

Dividends Nos. 58 and 59, each of 5 per cent, amounted to £330,938 and a sum of £100,000 was transferred to General Reserve.

Certain preliminary expenses incurred in connection with the increase in capital totalling £13,115, were written off and the balance of unappropriated profits, amounting to £116,045, was carried to the Balance Sheet.

Capital expenditure on fixed assets during the year less sales amounted to £1,265,384, and after making allowance for amortization of coal mining rights and depreciation, the Balance Sheet shows Fixed Assets at August 31, 1953, at £4,988,969.

Current Assets at £1,039,151, as against Current Liabilities of £1,659,996, indicated a shortfall of £620,845. This shortfall was due to the heavy capital expenditure to which I have referred, and was financed by temporary overdraft facilities which have since been liquidated from the proceeds of the recent new issue.

SALES

The following is a summary of sales of coal and coke over the years ended August 31, 1951 to 1953, inclusive:—

	1951	1952	1953
Coal	2,283,949	2,543,978	2,781,023
Coke	101,622	113,371	147,751
Coke Breeze ...	8,238	10,062	11,070

Plans have been made to bring about a substantial increase in productive capacity, and it is expected that there will be a progressive improvement commencing from about April, 1954.

FUTURE MINING POLICY AND CAPITAL EXPENDITURE

Careful studies of the future demands for coal in the Federated Territories have indicated that the company would have to provide for an increase in output to a figure of 5,000,000 tons per year by the end of 1956.

The Consulting Engineers have recommended, and your Board have adopted a mining policy which comprises briefly:—

(1) the introduction of machine mining at Nos. 1 and 2 Collieries as soon as possible and the adoption of a production technique similar to that used in most of the Transvaal collieries.

(2) the opening and equipping of No. 3 Colliery, situated about six miles from No. 1 Colliery, for the production of about 2,250,000 sales tons of coal per annum.

(3) the completion of a large variety of capital items on the surface, all of which are necessary adjuncts to the programme of expansion.

Work on the opening and equipping of No. 3 Colliery has already commenced and good progress has been made in providing the essential preliminary services such as electric power supplies, branch railway connection, water supplies and roads.

The Incline Belt Conveyor Shaft through which coal will be brought to the surface at No. 3 Colliery is expected to reach the coal seam before the end of the present year, and production of development coal should commence on a small scale early in 1954. The permanent coal preparation plant for No. 3 Colliery has already been designed with a capacity exceeding 500 tons per hour, and includes crushing facilities, together with bunker storage for over 10,000 tons of prepared coal ready for quick loading into railway trucks. Initially all development coal will be handled in a temporary plant, the erection of which is about to commence.

The expansion programme with all its ancillary requirements is estimated by the Consulting Engineers to cost approximately £5,300,000, distributed over the next three years.

TEKKA, LTD.

MAJOR W. E. HOSKING'S STATEMENT

The Thirty-third Annual General Meeting of Tekka, Limited, was held on November 18, 1953, at the Registered Office, Redruth.

Major W. E. Hosking (Acting Chairman) presided.

The report and accounts for the year ended March 31, 1953, having been circulated for the prescribed time, were taken as read, as was also the acting chairman's statement, circulated with the report and accounts, which was as follows:

Shareholders will observe from the directors' report that Mr. Stanley Wickett retired from the position of chairman of the company on December 31, 1952, and that he was succeeded in office by Mr. D. W. Thomas on January 1, 1953. That Mr. Wickett has agreed to retain his seat on the Board gives his colleagues the greatest pleasure and they hope they may long continue to have the benefit of his wise counsel and advice. Mr. Thomas is now on his way to Malaya where he will make an inspection of the various mines comprising the Gopeng Group, of which Tekka, Limited, is one.

During the financial year ended March 31, 1953, 109.24 tons of tin ore were recovered from 482,400 cu. yd. of ground treated. This compares with the 1951/52 production of 103.20 tons from 462,100 cu. yd.

The accounts for the year show a profit of £35,194 as compared with £33,394 earned during the previous financial year. Provision for United Kingdom and Malayan taxation absorbed £19,089, £11,685 having previously been paid as Royalty to the Malayan Government, a total contribution to Government funds of £30,774. Three interim dividends, a total of 5 per cent, were paid to shareholders on account of profits for the year, absorbing after taxation £9,636. £1,183 was written off capital account and £5,205 transferred to general reserve, leaving a balance of £27,220 on profit and loss account which the directors propose to carry forward to the current year.

Your company's claims on account of rehabilitation expenditure have now been agreed and the awards are as follows:

For Rehabilitation Expenses incurred £15,612
Compensation for assets lost £6,648

It is, therefore, apparent that at least £12,705 is irrecoverable and this amount has been transferred from the general reserve account in the balance sheet and the rehabilitation expenses in suspense have been lessened by a similar amount.

The report of our general managers, Messrs. Osborne and Chappel, gives particulars of work done and results obtained at the mine during the financial year under review. Shareholders have been advised of the output for the first six months of the current financial year, a total of 69½ tons of tin ore, and this tonnage is in keeping with the general managers' forecast that "the rate of output is expected to be maintained during the current year."

TIN PRICE

The price of tin was well maintained until April of this year when it fell by approximately £200 per ton metal and further rapidly delined to the uneconomic level of £568 per ton metal, equivalent to £409 per ton tin ore. Latterly there has been a small recovery, but at the present price few Malayan producers can work at a profit and put aside sufficient reserves to ensure the future.

It has been announced that the Governments of Malaya and the United Kingdom are considering reconvening the Geneva Conference. If the Conference is held it is hoped that in the negotiations represenatives of the consumers will appreciate that in order to maintain future production, and their supplies, the minimum price of tin must very considerably exceed the present level.

Recently the security position has greatly improved, but during the past financial year terrorists were active in the vicinity of the mine; a security force suffered and inflicted fatal casualties when investigating sabotage to the pipeline and later a Sakai employee at the headworks was abducted.

It is my privilege to record our thanks to the general managers, the manager and staff at the mine, for their loyal service under these most difficult conditions.

The statement of accounts and balance sheet, together with the directors' report were received and adopted.

KWAHU MINING

DIVIDEND RAISED TO 30 PER CENT

The annual general meeting of Kwahu Mining Company (1925), Ltd., was held on November 16 at Winchester House, London, E.C.

Mr. O. V. G. Hoare, chairman of the company, presided and in the course of his speech said:—It gives me considerable satisfaction to be able to place before you to-day the accounts which I feel show the company to be in a sound financial position. In particular, I am pleased that we are able to propose an increase in the dividend payment to a final of 25 per cent, making 30 per cent for the year to June 30, 1953. This increase is well within our ability in spite of the final dividend being on an issued capital of £110,906 instead of £80,000, consequent upon the amalgamation with Mount Elliott, Ltd., in May, 1953.

I am pleased to be able to inform you that, at the present time, profits for the current year, that is, to June 30, 1954, are comparable to those now under review and, subject to any marked change in the value of our investments, we should be able, at least, to maintain our current rate of dividend payments.

Our two main interests comprise shareholdings in Gold Coast Main Reef, Ltd., operating on the Gold Coast, and the Esperanza Copper and Sulphur Company, Ltd., operating in Cyprus.

It will be appreciated that our investment income, as a result of our large holdings in Gold Coast Main Reef, Ltd., is still derived largely from this source.

During the year under review, we were the main underwriters for an issue of shares made by the Esperanza Copper and Sulphur Company, Ltd., to furnish the money for the erection of a treatment plant in order to obtain full advantage of the various products from the Cyprus Mine. Latest progress reports indicate that the shipment of plant for this purpose and its erection is up to schedule. The new plant, when in operation, should provide a material increase in the profits of the local subsidiary company. For the last financial year, that is, to March 31, 1953, a profit of £93,520 was earned by the company, namely, the Cyprus Sulphur and Copper Company, Ltd., after charging £57,866 to cover amortization of general development and geological examinations.

The report and accounts were adopted.

KENTAN GOLD AREAS

CAPITAL REORGANIZATION APPROVED

LORD GREY'S STATEMENT

At an extraordinary general meeting of Kentan Gold Areas, Ltd., held in London on November 13, special resolutions were passed authorizing the directors to carry into effect the scheme for reorganization of the capitals of the company and its subsidiary, Geita Gold Mining Company, Ltd., and for the provision of further working capital for the latter company.

PROVISION OF NEW MONEY

In his preliminary remarks the chairman of the company, the **Rt. Hon. Earl Grey,** stressed that the scheme would enable Geita Gold Mining Company, Ltd., to move forward with an unencumbered capital and with the provision of £100,000 of new money with which to finance the capital programme recommended by the consulting engineers. Thanks were due to Tanganyika Holdings, Ltd., for agreeing to the scheme of reconstruction and for underwriting the proposed new issue of shares and to the consulting engineers, New Consolidated Gold Fields, Ltd., for their co-operation and advice and for the encouragement derived from their provision of finance. The assistance of these companies would enable Kentan Gold Areas, Ltd., to remain in being and so not to lose the possible use of substantial taxation losses which, were the company to be dissolved, would be entirely dissipated.

Results at Geita for the quarter ended September 30, 1953, showed that 67,500 tons of ore had been milled, producing 10,003.39 oz. gold at a recovery of 2.96 dwt. per ton, for an operating profit of £5,908. The ore reserves had been recalculated at June 30, 1953, and showed a total of 1,240,400 l.tons of ore at an average grade of 4.02 dwt. per ton. The mechanical situation at Geita is satisfactory, and the mill will shortly be capable of dealing with 1,000 tons of ore per day. Priority is being given to increased development work and the improvement of the grade of ore milled. The labour situation is satisfactory.

When the Court's approval of the scheme has been obtained, provisional allotment letters would be issued to shareholders inviting them to apply for new shares of 1s. each in the company at par.

CONSOLIDATED MURCHISON (TRANSVAAL) GOLDFIELDS AND DEVELOPMENT COMPANY, LIMITED

(Incorporated in the Union of South Africa)

Directors' Report for the quarter ended September 30, 1953

The following is the report on the work done during the quarter ended September 30, 1953:

Tons crushed	**19,209**
Estimated Loss from Antimony and Gold	**£46,792**

The estimated taxation payable for the nine months ended September 30, 1953, has been adjusted and is reduced to **£42,000** of which **£3,230** represents Loan Levy.

Revenue of **£133** in addition to the above was received during the quarter from sales of gold for manufacturing purposes.

The capital expenditure during the period amounted to **£2,856.**

During the quarter the development footage accomplished amounted to **305** feet.

The whole of this footage was accomplished in a lens known to carry gold values only. **275** feet were sampled and proved to be unpayable, giving an average value of **3.1** dwt. per ton over a width of **82** inches.

In the Annual Report for the year ended December, 1952, the Chairman stated that, after June 30, 1953, unless the demand for Antimony Ore improves, a considerable reduction in profit must be expected. During the quarter there was no demand for your product and, as a result, a working loss was incurred. Additions were made to the stock of cobbed ore and concentrates, and the Company remains in a position to take immediate advantage of any demand for Antimony as and when this arises.

By Order of the Board,
ANGLO-TRANSVAAL TRUSTEES LIMITED,
LONDON SECRETARIES.
I. C. H. GLASS,
Secretary.

WITBANK COLLIERY, LTD.

(Incorporated in the Union of South Africa)

Extracted from the ANNUAL REPORT for the Year ended August 31, 1953

AUTHORIZED AND ISSUED CAPITAL
£385,000 in 385,000 Shares of £1 each

Net Profit for the year		**£298,123**
Balance unappropriated at August 31, 1952		**219,320**
Forfeited Dividends		**17**
Making a total of		**£517,460**
This amount has been dealt with as follows:		
Funds transferred for Capital Expenditure	**£205,479**	
Taxation	**94,316**	
Dividends declared during the year:		
No. **93** of **1s. 9d.** per share, and		
No. **94** of **1s. 9d.** per share	**67,375**	
		367,170
Leaving a balance unappropriated of		**£150,290**

The coal dispatched from the Wolvekrans section totalled **1,432,382** tons, an increase of **16,505** tons compared with the figure for the previous year.

The Southern section was reopened during the year for the purpose of supplying the Witbank power station with crushed coal. Production commenced in April, 1953, since when **102,427** tons of crushed fines have been dispatched.

The complete results of the further boreholes drilled south of the Olifants river were satisfactory, and confirm that there is a considerable reserve of good grade coal in the area.

It is estimated that capital expenditure during the financial year ending August 31, 1954, principally in connection with the washing plant and the purchase of a new locomotive, will amount to approximately **£255,000.**

The full Report and Accounts may be obtained from the London Secretaries, A. MOIR AND CO., 4 London Wall Buildings, London, E.C.2.

RAND SELECTION CORP. LIMITED

DECLARATION OF DIVIDEND

NOTICE IS HEREBY GIVEN that Dividend No. 76 of 2s. per share has been declared for the year ended September 30, 1953 (previous year—same), payable to shareholders registered in the books of the Corporation at the close of business on November 27, 1953, and to persons presenting Coupon No. 78 from Share Warrants to Bearer.

The dividend is declared in the currency of the Union of South Africa, and becomes due on November 28, 1953. Warrants will be posted from the Head and London Offices of the Corporation on or about January 4, 1954.

The dividend is payable subject to the usual conditions which can be inspected at the Head and London Offices of the Corporation.

The Transfer Books and Register of Members will be closed from November 28 to December 5, 1953, both days inclusive.

Holders of Share Warrants to Bearer are notified that the dividend is payable on or about January 5, 1954, at Barclays Bank (Dominion, Colonial and Overseas), Circus Place, London Wall, E.C.2, Guaranty Trust Company of New York, 27 Avenue des Arts, Brussels, Belgium or Banque de l'Union Parisienne, 6 and 8 Boulevard Haussmann, Paris, 9e. Coupons must be left four clear days for examination.

The effective rate of Non-Resident Shareholders' Tax is 6.45 per cent.

Subject to audit, the profit for the year, after providing for taxation, was £746,000 (previous year—£723,206). After writing off, against the share premium of £700,000 received towards the end of 1952, expenses in connection with the issues of shares and 5½ per cent Unsecured Registered Notes, the sum of £650,000 (previous year—nil) has been placed to General Reserve, which now stands at £6,250,000.

By Order of the Board,
For and on behalf of
ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED,
London Secretaries.
W. E. GROVES.

London Office:
11 Old Jewry, E.C.2.
November 12, 1953.

SURVEYORS Vacancies occur for Mine Surveyors for leading Gold Mine in West Africa. Salary according to qualifications and experience. First tour 15 months abroad followed by three months' leave on full pay. Subsequent tours of 12 months. Passages, furnished quarters and medical attention provided free. A staff Assurance Scheme is in operation. Write, stating age and experience, to Box 4258, Whites, 72/78 Fleet Street, London, E.C.4.

NATIONAL COAL BOARD invite applications for a senior post of Work Study Engineer in the Work Study Branch of Production Department at London Headquarters. The duties of the post will include general supervision of the application of work study in the Board's mines, co-ordination of the arrangements for training Area Work Study Engineers, and close liaison with them (through Divisions) in the development of work study in coal mining, with prospects of eventually taking full charge of the Headquarters Work Study Branch.

The present holder of the post will have completed his tour of duty during 1954. His successor, however, will be appointed to the Headquarters staff some time before the vacancy occurs, in order to take a planned course of training in work study, before taking over full responsibility.

Applicants, who must hold a First Class Colliery Manager's Certificate, should have a good knowledge of modern mining methods and lay-outs and considerable experience in negotiating with labour. The successful candidate should be prepared to serve at the Headquarters of the National Coal Board for at least three and preferably five years. Though based in London, he will be expected to spend a good proportion of his time in the field.

The salary, which will be according to qualifications and experience and will not be less than £2,000 per annum, will be paid from the date of appointment to the Headquarters staff.

Write, giving full particulars (in chronological order) of age, education, qualifications and experience (with dates), to National Coal Board, Establishments (Personnel), Hobart House, Grosvenor Place, London, S.W.1, marking envelope TT/704. Original testimonials should *not* be forwarded. Closing date December 4, 1953.

HER MAJESTY'S COLONIAL SERVICE

Vacancies exist for Inspectors of Mines in the Colonial Mines Department of:

(a) Nigeria (CDE 99/14/01). Age limit 23-30 years;
(b) Uganda (CDE 99/9/01). Age limit, preferably under 40 years;
(c) Tanganyika (CDE 99/8/01). Age limit 33 years, and
(d) Federation of Malaya (CDE 99/60/01). Age limit 25-35 years.

Qualifications (a, b, c and d): Degree or diploma of a recognized School of Metalliferous Mining plus (a and d) two years' post-graduate experience; (b only) at least three years' practical experience including underground mining; (c only) a minimum of three years' post-graduate experience and two years in underground mining.

Duties:
(a) Guidance, control and inspection of mining development and the administration of mining legislation,
(b) Inspection of mines and quarries and the administration of mining inspectorate and controls under mining laws and regulations,
(c) Administration of laws as to prospecting and mining and the guidance, control and inspection of mine development and working,
(d) Supervision of mining operations and mediation in mining disputes, together with work in the Research and Development Branch and on the Application of laboratory results to mining practice.

Terms of Appointment:
(a) Pensionable, with salary in the scale £650-£1,290 per annum (according to experience) plus a pensionable overseas allowance of between £180-£270 per annum or on contract gratuity terms if preferred. Outfit allowance of £60 on salaries below £950.
(b) Pensionable with salary in the scale £655-£1,320 per annum (according to experience) plus a non-pensionable temporary special allowance of between £229-£350 per annum. Outfit allowance of £30 on salaries up to £840.
(c) Pensionable with salary in the scale £655-£1,320 per annum (according to experience) plus a non-pensionable emergency allowance of between £229-£350 per annum. Outfit allowance of £45 on salaries up to £840.
(d) Pensionable with salary in the scale £738-£1,680 per annum (approximately) (according to experience) plus a pensionable overseas allowance of between £266-£364 per annum. A variable non-pensionable cost-of-living allowance is also payable.

Applications should be made in writing to the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith Street, Westminster, S.W.1 (from whom further particulars can be obtained), quoting appropriate reference number and brief particulars of age, qualifications and experience.

GOLD COAST LOCAL CIVIL SERVICE

Vacancies exist for Inspectors of Mines on contract terms to the above Service, for two tours of service (18 to 24 months each tour).

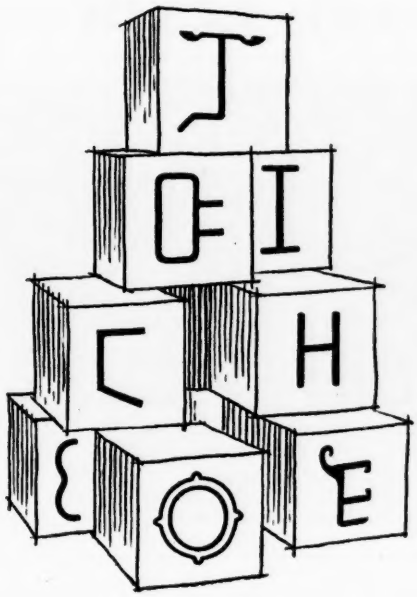
Emoluments: Salary in the scale £1,030-£2,020 p.a. Gratuity at the rate of £37 10s. for each three month period of satisfactory service. Outfit allowance of £60. Income tax at low local rates.

Conditions: Quarters provided when available at a rental of between £60 and £90 per annum. Free first-class passages for officer and wife and up to three children under the age of 13 once each way each tour. Leave at the rate of seven days for each completed month of resident service.

Qualifications: Degree or Diploma in Metalliferous Mining of a School of Mines or similar qualification together with at least three years' practical mining experience underground.

Duties: Inspection of Mines; enforcement of mining regulations and safety measures; responsibility for carrying out Minerals Ordinance and Regulations; maintenance of official records.

Apply, in writing, to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience. Mention the reference number CDE. 99/13/03.



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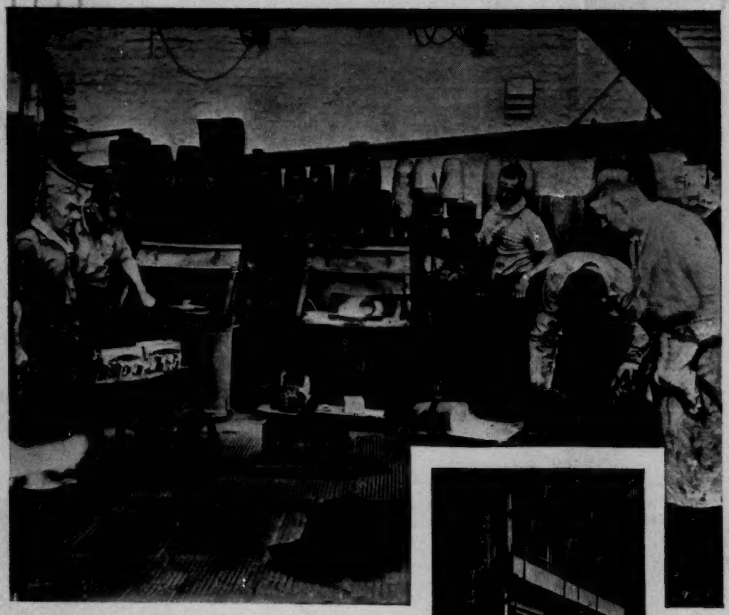

Large Lodge-Cottrell Precipitators installed at the Royal Mint Refinery are used to recover valuable dust from vapours produced during gold and silver refining.

Valuable Vapours...

LODGE-COTTRELL

Casting Fine Gold Bars in the Gold Foundry at the Royal Mint Refinery, London, owned by N. M. Rothschild & Sons. Photograph by courtesy of The Times Review of Industry.

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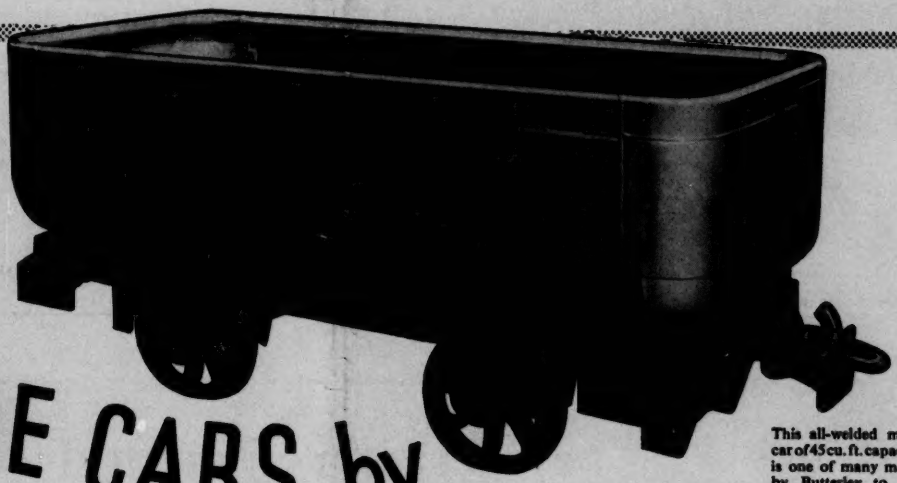

MINE CARS by BUTTERLEY

This all-welded mine car of 45 cu. ft. capacity is one of many made by Butterley to the latest N.C.B. specification.

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